ROYAL AGRICULTURAL COLLEGE

I'M SO HUNGRY I COULD EAT A HORSE! THE ESTIMATED ECONOMIC IMPACT ON THE UNITED STATES AND EUROPEAN UNION RESULTING FROM A PROPOSED U.S. BAN ON HORSE SLAUGHTER FOR HUMAN CONSUMPTION

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This dissertation is submitted in part fulfilment of the requirements for the degree of International Master of Business Administration in Food and Agribusiness of the Royal Agricultural College, Cirencester

2004

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Signed

Michael S. North
Dated: November 20, 2003

ABSTRACT

I'm So Hungry I Could Eat a Horse! The Estimated Economic Impact on the United States and European Union Resulting from a U.S. Ban on Horse Slaughter for Human Consumption

by

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Utah State University, 2003

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While the consumption of horse meat is culturally acceptable in Europe and other places in the world, little horse meat is consumed in the United States because of a social stigma attached to its consumption. The U.S. House of Representatives is considering a bill (HR 857) that places a national ban on the slaughter or export of horses for slaughter for human consumption. The results of such legislation may have important economic consequences for the horse industry in the United States and the horsemeat market in Europe.
One objective of the paper is to examine the direct and indirect impacts of the proposed legislative ban. Another objective is to examine the impact of the proposed legislative ban on the E.U. horsemeat market.

The methodology uses both econometric modeling and regression

techniques together with a financial analysis of discounted disposal costs to determine the impact of the proposed ban on the U. S. horse industry. Qualitative methods include interviews with individuals in the horsemeat market from the U.S. and the E.U.

Conclusion made include the U.S. long and short term monetary impact and the factors that sustain the horsemeat trade. The most significant factors in the value of cull horses include the quantity of horses available and imports from countries other than the U.S. The U.S. horsemeat market will incur both an immediate and a long term monetary impact. The immediate impact is an estimated loss of $24,320,000 resulting from the termination of horsemeat sales and a decrease in live cull horse value. The long term impact includes either euthanizing and disposing of unwanted horses annually, or caring for the horse until natural death. Europe will also incur a monetary impact with the most significant occurring within the French restaurant market. This suggests a potentially broader and deeper impact on the industry than the drafters of the proposed legislation may have initially believed. Further consideration and planning should be undertaken before such a ban is put into place.

(143 pages)

ACKNOWLEDGMENTS

Researching and writing this thesis has been a wonderful journey. I thank my wife, Angie and daughter, Coryne for supporting me on this journey. I thank my Thesis committee, especially Dr. DeeVon Bailey for the countless hours, during and after school, to help me with this project. I thank those who were involved in the research and their willingness to share their knowledge of the horse industry. Finally, I thank my parents for instilling in me the importance of knowledge and hard work.

Thank you,

Michael Shane North

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ABBREVIATIONS AND ACRONYMS

AAEP—American Association of Equine Practitioners

APHIS—Animal and Plant Inspection Service

AWI—Animal Welfare Institute

DEFRA—Department of Environmental Food and Rural Affairs

EPN—Equine Protection Network

ERS—Economic Research Service

E.U.—European Union

FATUS—Foreign Agriculture Trade of the United States

ILPH—International League for the Protection of Horses

NASS—National Agriculture Statistics Service

NTRA—National Thoroughbred Racing Association

PMU Ranches—Pregnant Mare Urine production ranches

SAPL—Society for Animal Protective Legislation

SPANA—Society for the Protection of Horses Abroad

U.K.—United Kingdom

U.S.—United States

USD—United States Dollar

U.S.D.A.—United States Department of Agriculture

CHAPTER 1

INTRODUCTION

Horses are purchased for recreation, sporting events, shows, work, or as companion animals. Rarely does a new horse owner consider the inevitable time when a horse will die and must be disposed of. This responsibility can be an unhappy topic and is often not discussed openly. Disposal methods are few, consisting of slaughter, burial, rendering, and incineration. Horse slaughter is a $26 million industry (FATUS). Although horsemeat is not typically consumed in the United States, it is a popular product in other countries. Many people in Europe, Japan, Siberia, parts of South America, and Canada consider horsemeat a delicacy.

The past decade has seen new debates challenging the practice of slaughtering horses for meat in the United States and shipping the meat to foreign consumers. Europeans have consumed horses throughout history, but internal supplies are insufficient to meet demand (Potter). Consequently, importing horsemeat is an important business in Europe and has provided a method to dispose of some U.S. horses.

Horse enthusiasts, animal welfare activists, and many common citizens have lobbied the U.S. House of Representatives to write legislation banning the slaughter of horses for human consumption. State courts in Texas have held it illegal to slaughter horses for human consumption in the state of Texas since 1949 (THLN). Nevertheless, the two remaining equine slaughtering plants in

the United States are located in Texas. In 1998, the California legislature voted to ban the slaughter of horses in California. This law includes the transfer of horses to other states with the intent of slaughter. Many other states have considered enacting similar laws. In February 2003, Representative John Sweeny of New York, along with 60 co-sponsors, introduced legislation to ban the slaughter of horses in the United States (Sweeny).

Research Objectives

The first objective of this Thesis is to examine one of the methods for equine disposal: the slaughtering of horses for human consumption. The proposed federal ban will potentially impact both the horse industry in the United States as well as the market and meat price of imported horsemeat in the European Union. This paper examines the potential economic impact a slaughter horse ban would have in the United States. It details the potential monetary loss resulting from outlawing the slaughter of horses for human consumption and explores the impact it might have on the $112 billion U.S. horse industry (American Horse Council). Furthermore, it investigates the possible consequences a U.S. slaughter horse ban might have on the supply of horsemeat in Europe.

This paper describes methods of disposal for cull horses. It explores in detail the slaughter horse sector as well as the political, economic, and social issues that have spurred development of the proposed U.S. legislation banning the slaughter of horses for human consumption. In

Conjunction with describing what is known about the slaughter horse industry, this Thesis also mentions the large amount of information we do not know.

The final objective of this Thesis is to summarize the effects of a slaughter horse ban on equine welfare. It explores the concern over the transport of slaughter horses as well as possible welfare impacts resulting from the closure of slaughter disposal.

Purpose for Research

This Thesis has been written for two general purposes. Firstly, it satisfies the requirements for the International MBA degree in Agribusiness from the Royal Agricultural College. Secondly, this paper supplies a compilation of issues pertaining to slaughter horses. The United States has a different paradigm concerning the consumption of horsemeat compared to the European Union. This paper promotes the understanding of current activities in the horsemeat business in the United States and the European Union. With a better international understanding of the horsemeat industry, both the public and I will be better informed when making decisions affecting human preferences and equine welfare. Please note that the opinions and declarations are taken from a wide variety of resources and are not representative of the researchers personal paradigm.

Ignorance is the easiest way for one to be assured of the correctness of one's positions. The public could form opinions about horse slaughter based on potentially biased information promoted by special interest groups and the

media because the only public information currently available is from special interest groups and the media. This research discusses the various arguments but also provides a statistical analysis of the likely financial consequences of proposed U.S. legislative action.

Horsemeat consumption is a sensitive topic but one that cannot be ignored by anyone in the horse industry. The proposed national ban will not only affect the U.S. horse industry but also the horse industry in other countries. It may affect horse producers by influencing the costs associated with horse ownership. International trading and food consumption in foreign countries will be affected because U.S. exports of horsemeat would be severely restricted or eliminated. A ban will also impact the welfare of horses. This is a complicated matter and all aspects of the issue should be considered before adopting such legislation. The impact of such a ban will be felt by horse owners, their horses, and the general public.

Arguments from legislators, special interest groups, horse associations, and horse specialists have been compiled in this Thesis to illuminate the current legislative debate. This Thesis examines the current situation in light of current regulations and the potential effects of the proposed legislation. Hopefully, readers will be able to develop an informed opinion based on the discussion herein, and understand the potential consequences of different policies involving the horse slaughter industry. This information will hopefully aid decision makers in forming their approach to resolving issues surrounding horse slaughter and horsemeat consumption.

The Importance of Studying Horsemeat Consumption

Information about the methods of horse disposal and the slaughter horse industry is minimal. Scientific research is a major focus in the equine industry related to virtually all issues besides disposal. Generations of study have examined reproduction, disease, pharmacology, and nutrition. Extensive research has been conducted relating to the business of racehorses and betting on them. In order to compete at horse shows, substantial resources are channeled into breeding, horse bloodline marketing, and transportation. Very little research has been conducted concerning horse disposal methods. Data about the number of horses slaughtered are gathered because of meat inspection requirements, but little research about horse slaughter and horsemeat consumption has been done compared to other areas of interest. Government regulations affecting slaughter horses have only been in effect in recent years.

We live in a global society. Horses and horse equipment are marketed and distributed throughout the world. Racehorses from across the globe are transported to major racing events. Despite this global trade, little research has been conducted on the international trade in horsemeat. As a result, there is little information on which to base decisions.

The current study adds additional information and analysis that may aid public policy and horseowners in making informed decisions about the law related to the slaughter of horses for human consumption. This includes information about the potential costs associated with banning horse slaughter.

CHAPTER 2

CURRENT OUTLOOK OF THE SLAUGHTER HORSE INDUSTRY

Humans domesticated horses centuries ago and have developed many breeds for various purposes. In the United States, some states raise more horses than dairy cows, beef cattle, and swine (NASS). Horses have been used for work, recreation, and, occasionally, as food. There is considerable debate among Americans regarding the consumption of horsemeat. Some strongly believe that horses should never be slaughtered and consumed by humans. The opposition view is that consuming horsemeat is a personal preference and that horses are livestock and disposing of them through slaughter is an efficient way to dispose of unwanted horses.

Description of Unwanted Horses

Every horse owner must eventually choose between maintaining the animal or disposing of it. Every horse will die and need to be disposed of. Two questions help weigh the benefits versus the costs of maintaining or disposing of a horse: (1) how much am I prepared to pay to restore this horse to full health?; and (2) how much am I willing to pay for an unusable, sickly horse until a natural death occurs?

Some horses are unwanted and burdensome, while some are beloved companions. Choosing to euthanize a horse can be difficult. The following conditions may cause owners to consider disposing of a horse.

Aged Horses

It can be difficult to determine an appropriate course of action as a horse ages. The "rule of thumb" recommended by veterinarians is to euthanize the horse when it experiences more bad days than good. "Telltale signs of lowered quality of life include difficulty moving; significant weight loss; frequent, severe pain; discomfort when standing or lying down; and depression" (Endersby). Euthanasia is done by injecting the horse with phenobarbital, choral hydrate, or a combination of these. The following are some reasons a horse may need to be disposed of before reaching old age.

Horses that are Deemed Dangerous

- Horses with behavioral problems known as outlaws are horses that cannot be trained, or they unpredictably flee or buck
- Weavers and pacers
- Incurable diseases (Equine Infectious Anemia, Equine Encephalomyelitis, West Nile virus)

Injured Horses

- Blindness
- Foundered
- Lameness
- Broken bones, especially limbs
- Cuts, abrasions

Breeding Failures

- Bad conformation, deformed, or bad limbs.
- Slow race horses.
- Unaccomplished show horses.

Another source of unwanted horses is the production of pregnant mare serum, also known as Premarin. This drug is used to treat women experiencing vaginal itching, pain, and hot flashes that are associated with menopause. The mare's offspring become a "by-product" of Premarin production (Humane Society of the United States).

In many of these cases, the horse has a higher value as horsemeat than as a riding, working, recreational, or companion animal. Other horses become unwanted when the owners are no longer able or willing to care for them. Financial difficulties, lack of space, high maintenance or veterinary cost result in owners looking for a method of selling or disposing of the horse.

The Disposal Sector

There are few methods for disposing of an unwanted horse and the environmental concerns engendered by disposing of large animals are many. The following section details the methods of disposal, some of the concerns involved and the costs involved. In addition, the costs associated with each method are presented in table 1.

Table 1. Costs Associated with Horse Disposal

				Total cost of Euthanasia, hauling and disposal
Euthanasia +	$71-90[a]	Average	$80	
Transportation *50 miles @ $.35 per mile			$18	
Slaughter*				
Cremation/ Incineration	$1,000[b]		$1,000	$1,098
Rendering	$75-100[c]		$88	$186
Burial	$200-350[d]		$275	$373
Landfill	$100[e]		$100	$198
Care until natural death**	$195/Mo[f]	195*12*10.5 yrs		$24,570

*Slaughter is considered a gain, not a cost and therefore not listed. Slaughter prices are listed in Appendix 1.
**Disposal at death is not calculated into the horse's maintenance costs.

[a]Thomson Veterinary Healthcare Communications pp. 107.
[b]Endersby .
[c]Endersby.
[d]Endersby.
[e]Endersby.
[f]Table 2, pp. 56

Specialist Abattoirs, Slaughterhouses, Packing Plants

Because of food safety regulations and the need for processing efficiency, many slaughtering facilities have specialized in harvesting one animal species. Horses can be disposed of using this sector but few plants process horses. Horses are taken by "killer buyers" or by the owner to the processing plant. The animal is slaughtered, and the carcass is used for animal feed or retail products for the human market. This is the only disposal method for which the owner receives a monetary benefit from disposal of the horse.

Rendering

Horses that are euthanized by a veterinarian or died of natural causes have their remains taken to a rendering facility. Rendering is the process by which animal carcasses are ground up, mixed, and used for animal feeds, household products, glue, crayons, plant fertilizer, and many other products. Veterinarians charge $71–$90 USD to euthanize a horse (Thomson's Veterinary Healthcare Communications). Rendering companies charge a $75–$100 USD service fee plus mileage for pick-up (Endersby). Rendering services are available in the United States, Canada, and the European Union.

Incineration (Cremation)

Incineration is the process in which the carcass is burned at high temperatures at an incineration facility. The horseowner is responsible for payment of the euthanization service, hauling, and incineration. Cremation costs approximately $1,000 USD (Endersby). Incineration plants are limited, but are available in the

United States, Canada, and the European Union.

Unprocessed Animal Feed

In the United Kingdom, knackermen shoot the horse on-site, or if the owner prefers, it is taken to another location and killed by gunshot. The horsemeat is then fed to the hunting hounds. This method of disposal is practiced more in Europe than North America. This service costs $160–$240 USD (£100-£150) (Potter).

Burial

One of the most widely used methods of disposal in the United States is burial. After death, the horse's body is taken to a landfill that accepts large animals or the horse is buried on-site. A backhoe or contractor must be hired to excavate a grave. This usually costs between $100 and $350 USD, depending on the location. Burial must be done 300 feet away from any water source. The horse should be buried in a dry pit eight feet deep. This is necessary to prevent underground water contamination. Many times lime is placed on the body to enhance decomposition (Endersby).

Landfill

Landfill fees for large animals vary with location, but average $100 USD (Endersby). The horseowner is responsible for the payment of the euthanasia, hauling, and landfill fees. This method is more common in the United States than in Europe. Burial is illegal in the United Kingdom.

Horse buying for slaughter processing is a quiet trade, which has been a

"mom and pop" industry made up of a few buyers. These dealers purchase horses through individual owners, horse sales, or auctions. Horses are taken after purchase to the slaughtering facility and processed. Unlike other meat species, which are sold to major retailers and supermarkets, horsemeat is exported and then sold to small butcher shops and passed on to Japanese, Canadian and European consumers. This is explained clearly in an interview with the owner of Potters Abattoir.

> We are very tight between the people who supply the horses, we put it down and supply it to the person who receives the meat in Calais, [France] who cuts it and sells it to the consumer. So we have the whole chain between us…if someone sneezes here then the guy in Paris knows it before he realized he sneezed (Potter).

Slaughtering Facilities

The number of horsemeat packing plants in the United States has decreased in the last decade. Until the mid-1990s, four packing plants processed horsemeat in the United States for export (Kroupious). Central Nebraska Packing in North Platte, Nebraska, processed horsemeat for human consumption for many years. They decreased the amount of horses slaughtered and now focus on production of meats for zoo animals. A Chicago, Illinois, packing plant quit slaughtering horses when an explosion and fire outbreak severely damaged the building. That operation was subsequently moved to Canada (Kroupious). There are currently two packing plants processing equine in the United States. Both are located in Texas; Bel-Tex in Forth Worth and Dallas Crown in Kaufman.

Canada has four equine slaughtering facilities: Barton Feeders Company, LTD, located in Owen Sound, Ontario; Yamatra Import-Export, Inc. in Yamachiche, Quebec; Richelieu Meat, Inc. in Massueville, Quebec; and Bouvry Export Calgary, LTD in Fort Mcleod, Alberta.

European Abattoirs

Many horse abattoirs are scattered throughout mainland Europe. I learned of a few of their locations during 7 country tour of Europe. France, Belgium, Germany, Switzerland, and Italy are the countries with the most horse abattoirs. In Brussels, one horse abattoir supplies seven butcher shops. Horses raised in Brittany, France, are intended for the Parisian horsemeat market. Italy specializes in sausage, with horsemeat as the main ingredient. Abattoirs are located on the outskirts of Firenze and another near Milano. Other abattoirs and butchers throughout Italy supply the horsemeat for sausage. Great Britain has two abattoirs processing horses: Potters abattoir in Taunton, and Turners in Cheshire.

In 2000, 359,000 horses were slaughtered for meat in Europe. Of those slaughtered, 32% came from countries outside the E.U. borders (Simonin). European countries account for 140,000 horses per year (Smales). Romania exported the greatest number of live horses in Europe in 2001 (61,479). The Romanian horses sold for slaughter were a mixture of old workhorses and light horses of varying ages. In contrast, the majority of horses being exported from Poland are specifically farmed for the horsemeat market. These farmed horses

are exported to Italy. In the 1990s, Polish horses accounted for 85%–95% of live horse imports from neighboring European countries (Leckie; White).

PEST Analysis

The equine industry's macroenvironment can best be described through a PEST analysis which will demonstrate the current condition of the slaughter horse sector. PEST is the acronym for P–Political, E–Economic, S–Social, T–Technology. All of these factors affect the disposal sector of the equine industry.

Political Factors

In the United States, the equine industry is regulated by the United States Department of Agriculture. In addition, each state enacts laws that are binding within its borders. Federal laws encompass all 50 states and federal law overrides state law when conflicts occur.

The European Union is made up of 15 member states: The United Kingdom, Belgium, France, Italy, Germany, Portugal, Spain, Sweden, The Netherlands, Finland, Denmark, Austria, Greece, Luxembourg, and Ireland. Parliaments in each of the member states of the European Union introduce laws and regulations that affect the equine industry. Furthermore, a governing E.U. body, representing all of the E.U. members, enacts legislation protecting horses and regulating the horse industry.

Because equines are being shipped transnationally more frequently now

than in the past, international equine associations have emerged to propose, endorse, and investigate equine legislation. The Animal Transportation Association (AATA), based in England and in Texas, is one such association. The International League for the Protection of Horses (ILPH) is the largest private equine protection organization in the world (ILPH, 1997). The ILPH advocates equine research and acts as an outside voice in the legislative decision processes.

U.S. Legislation

Among the most prominent U.S. laws affecting the equine slaughter industry are: (1) a proposed federal bill to prevent the slaughter of horses in and from the United States for human consumption (H.R. 857); (2) a proposed Texas state bill that will change current legislation, making it illegal for humans to process or sell horses for the use of human consumption in the United States (H.B. 1324, S.B. 1413); and (3) methods of slaughter horse transportation, the final rule.

Federal Bill H.R. 857

U.S. Representative John Sweeney of New York introduced H.R. 857 in conjunction with other supporters from South Carolina, New Jersey and Virginia. H.R. 857 is titled: The American Horse Slaughter Prevention Act. (Sweeny et al.) This bill is similar to the Morella Bill, H.R. 3781, proposed in 2002 but did not receive a hearing in the US House of Representatives.

H.R. 857 would prohibit the slaughter of horses in and from the United

States for human consumption as well as the trade and transport of horseflesh intended for human consumption.

The reasons this bill was proposed fall into four general categories: (1) horses have not traditionally been raised or intended as a foreign consumable product in the United States, (2) animal welfare issues, (3) food safety issues, and (4) international trade disputes and misrepresentation (Sweeny et al.).

Over the centuries horses have become a part of history and culture. Because of the bond between humans and horses, horses are typically not consumed in the United States. In contrast, an export market for horsemeat from the United States has developed more vigorously with approximately 100,000 horses being shipped abroad annually (Cordes et al.).

Animal welfare is a large concern throughout the United States and is addressed in this bill. Two main welfare issues affect the horsemeat market. First, horses must be transported to a slaughtering facility. With only two working slaughtering facilities in the United States, many horses are typically transported long distances for slaughter. There are many concerns related to the comfort and stress levels of the animals during transport. Second, there are also concerns regarding handling and killing practices within the slaughterhouse. Typically, horses are stunned with a captive bolt gun and bled out. This is the method commonly used in harvesting sheep, cattle and hogs. H.R. 857 recommends the use of chemically induced euthanasia instead of the captive bolt gun. This recommendation could render the horsemeat unsuitable

for human consumption.

Because horses have not traditionally been raised for human consumption in the United States, existing drug regulations do not account for drug residues in horsemeat. Advocates of H.R. 857 express concern that contamination of the food supply could result if horsemeat is not excluded from the human food chain. This would only affect foreign meat market and would typically be monitored prior to export.

The final section of H.R. 857 discusses the problem of horses stolen specifically for slaughter. Current regulations do not require purchasers to inform sellers of their intent to slaughter the horses. Advocates contend that this bill will address that situation.

H.R. 857's Purpose

The purpose of H.R. 857 is to prohibit the sale of horseflesh for human consumption live or as a carcass. It prohibits the slaughter of horses for human consumption and prohibits the sale, possession, and trade of live horses for slaughter or horseflesh for human consumption.

Penalties for violations include imprisonment for not more than one year and/or a fine of not more than $5,000 but not less than $2,500. The violator's vehicle and cargo may be seized until criminal prosecution is completed. Horses may be seized and temporarily placed in a government-sanctioned animal rescue facility.

Section six also prescribes the action to be taken if emergency

euthanasia is required or if permanent placement is necessary. Sections seven, eight, and nine discuss reporting on enforcement, H.R. 857 exemptions, and enforcement dates, respectively.

The status of the bill has not changed since its introduction in February 2003. It has been referred to the House Agriculture, the House International Relations, and the House Ways and Means Committees. No hearings have been scheduled as of this writing.

Texas Bill H.B. 1324/1413

Texas State Representative Betty Brown has proposed a bill relating to the sale and slaughter of horses. H.B. 1324 is titled; "*An Act,* relating to the sale and slaughter of equine animals" (Brown).

In 1949, Agricultural Code, section 149.002 outlawed the practice of horse slaughter and is still in affect today (THLN). It is illegal to sell, offer to sell, or intend to sell horsemeat for human consumption. However, slaughter facilities have been able to continue because of the obscurity of the law. Two plants in Texas legally operate under federal exporting laws. A statement by Betty Brown explains:

> The Belgian-owned plants, Beltex Corp. and Dallas Crown Packing Inc. want the state's law against selling horse meat ruled unconstitutional, saying that only the federal government can regulate international commerce.
>
> Animal rights activists think I'm trying to make it legal. But it is legal, I'm trying to clarify the law. There's a lot of misinformation (Hammerstrom).

Because the Texas plants are the only remaining horse slaughtering

facilities in the United States, closure of the plants will affect the slaughter horse industry. The economic chapter of this Thesis shows that the amount of horsemeat exported from the United States to Europe has decreased in the past decade. One of the reasons for this can be attributed to the decrease in U.S. processing facilities.

The main purpose of H.B. 1324 is to keep the two existing slaughter plants in operation. H.B. 1324 amends the current agricultural code concerning three major topics related to equine slaughter. It defines the law concerning the sale or possession of horsemeat, defines the transfer of horsemeat, and requires notification of both the buyer and the seller when a horse is sent to market.

Under section 149.002, the Texas bill states that a person commits an offense if the person sells, offers for sale, and exhibits for sale horsemeat for human consumption in the United States. The United States is underlined in this paragraph, giving emphasis on location.

Section 149.003 continues a discussion regarding the eating of horsemeat in the United States. This section outlaws the transfer of horsemeat to any person with the knowledge or intent to sell or exhibit horsemeat for human consumption in the United States.

Section 149.009 requires equine sellers to be informed that their horse may be sold as horsemeat for human consumption. The owner/operator of a livestock market must display a sign explaining that the horse sold at the market may be purchased for slaughter. The bill concludes by defining changes in

previous laws and the date on which the act will take effect.

S.B. 1413 is a complementary bill to H.B. 1324 that repeals the current agricultural code outlawing the slaughter of horses. This bill, sponsored by Senator Bob Deuell, would also legalize the consumption of horsemeat in Texas. The vote on S.B. 1413 has not yet taken place.

On May 30, 2003, the Texas senate voted down H.B. 1324. It is now considered to be a dead bill, therefore, it is still illegal to slaughter horses in Texas. Bel-Tex and Dallas Crown, along with its 130 employees are facing the threat of closure. In response to the failure of H.B. 1324 to pass the Texas senate, a federal judge granted a temporary interim for the two plants. They are permitted to ship horsemeat overseas until a Tarrant County lawsuit against Bel-Tex is settled. No action will be taken until after the hearing (Brooks; Drosjack).

Political Forces of Slaughter Horse Transportation

Horses are transported frequently and for long distances. Slaughter horse businesses rely on economies of scale to lower the costs of transportation. Because there are only two equine slaughterhouses in the United States, both located in Texas, many horses endure longer journeys. Because of the distance to Texas, many dealers send the slaughter-bound horses to the neighboring countries of Canada and Mexico.

For many years the USDA has recommended methods of humane horse transport, but written rules had not been enacted. Slaughter horse

transportation regulations from the Animal, Plant and Health Inspection Service (APHIS) have only been in place for approximately 17 months.

The European Union also examines the need for regulations to govern equine slaughter transport. On July 16, 2003, the European Commission published a proposal to replace current animal transport regulations. This proposal is currently under consideration by the European Parliament. The U.K.'s Department of Environment Food and Rural Affairs (DEFRA) along with special interest and lobbyist groups are pressing for measures that will affect the proposal for all horses, including horses that are intended for slaughter.

APHIS has proposed a "Final Rule" on slaughter horse transport regulation. The Final Rule explains that slaughter horses have unique and special needs during transport compared to recreation or sporting animals. Financial incentives to upgrade a slaughter horse's living conditions are limited, therefore, animal abuse becomes a factor. The Final Rule sets lifestyle standards that must be met when transporting slaughter horses (Cordes et al.).

The most significant change in this proposal is that it outlaws the use of double-deck trailers beginning in the spring of 2007. It outlines the regulations for treatment of slaughter horses and is defined by "performance based standards." Differing from "engineering-based standards," where every regulation is laid out definitely, the Final Rule sets guidelines that can be evaluated by the condition of the horse upon arrival (Cordes et al.). Because of the importance of the Final Rule directive, a more precise description is included in the welfare chapter concerning the transport of horses to

slaughtering facilities.

European Union Equine Passports

E.U. legislation requiring “equine passports” will take effect on November 30, 2003. Horse passports are identification documents issued by a recognized organization under the Secretary of State for Environment, Food, and Rural Affairs.

Most horses in the United Kingdom require a passport. The exceptions are Dartmoor Commoners, New Forest Commoners Defense Association, and the Exmoor Pony Society. Semi-feral breeds are also exempt. These associations and breeds do not fall under passport legislation unless they are being sold, used for recreation/sporting activities, or regularly transported. Horses entering into the United Kingdom are exempt but must apply for a passport within 30 days (ILPH, 2003).

Legislation in the United Kingdom concerning passports will affect the horsemeat industry. This legislation contains an “opt out clause.” This clause will give the first person registering the horse the option to declare whether or not the equine may be slaughtered for human consumption (ILPH, 2003). This may pose a disposal problem for horse owners when a horse has changed hands several times and the terminal owner must dispose of it. Passports will allow complete identification of the horse during transactions and veterinary care, and will combat theft.

Economic Environment

Components of economic analysis include macroeconomic factors such as exports, price, and inflation. The supply and demand for a good makes up an economic market. Although this report details the economic impact of the slaughter horse sector of the horse industry, to increase understanding, we must address the overall economy of the horse industry.

Horse purchases, equipment, retail sales, and employment create an estimated gross domestic product (GDP) impact in the United States of $112.1 billion USD (Force of the Horse, p. 4) The horse industry provides 1.4 million full-time jobs, which generate $1.9 billion USD in taxes annually (American Horse Council).

Over seven million Americans are involved in the horse industry through ownership, employment, or providing equine services. Horse events draw tens of millions of Americans as spectators providing a very significant amount of money velocity (Force of the Horse).

Horsemeat Supply

The horsemeat supply for Europe and Asia comes from many countries around the world. Argentina, Eastern Europe, and Australia are major suppliers. Mexico is the second largest supplier of horsemeat in the world.

With a growth in inventory of approximately 1.3% since 1992, there are more horses in the United States today than at any time in known history (Force of the Horse). 2002 horse population statistics estimate that there are 6.9

million horses in the United States (American Horse Council). Almost two million Americans own horses, approximately 4.3 million of the 6.9 million U.S. horses are used for recreational activities (American Horse Council). While in the past horses were primarily work animals, today most are intended for recreational pursuits. Competitive showing and racing are the second and third largest activities involving horses. Of the U.S. horse population, 75% is engaged in these three activities (American Horse Council). This information is derived from the national economic study of the horse industry commissioned by the American Horse Council. The survey, conducted by the Barents Group LLC, is the result of 30,000 people involved in the horse industry.

Demand for Horsemeat

The U.S. slaughter horse industry is dependent on foreign demand. A very small amount of horsemeat is consumed by humans in the United States, therefore, the market for a "horsemeat burger" is literally nonexistent. Today many people consider horses as a companion animal, like a dog or cat. It is unlikely that Americans are going to begin eating horsemeat and, therefore, the market relies on Europe and other regions' demand for the product.

In the United States, demand for horsemeat is comprised mainly of zoo needs to feed carnivores. Lions, tigers, bears, and primates are fed horsemeat as part of a balanced food ration. Tim Pappas, commissary keeper of the Cleveland Metroparks Zoo, prepares daily rations for the zoo animals. "Prep starts by chopping up 100 pounds of horsemeat ordered from a Nebraska

packing plant" which is then fed to primates and the big cats (Anderson). Dave Wygonski, a supplier of animal feed for the zoo proclaims, "They eat well, the animals, probably more healthy than me or you" (Anderson).

One popular misconception in the United States is that unwanted horses are the main ingredients for dog food. When a horse is unwanted, it is either "sold for dog food" or "sent to the glue factory." This may have been true in the past, but now alternative, less expensive substitutes have replaced horsemeat in these manufactured products. Dog food producers may use some of the rendering portions of horses, but dog food is primarily made up of grains and rice with some beef and chicken byproducts (Pet Provisions).

Horsemeat is still used as dog food in the United Kingdom, although not in processed form. Knackermen provide a service in which the unwanted horse is killed according to the owner's desires. The horsemeat is taken by the knackermen and fed directly to hounds. Usually these are hounds used in fox hunting.

Social Factors

Social factors play the largest role underlying legislative proposals to ban the slaughtering of horses for human consumption. The social aspect has brought many groups to proclaim the slaughter horse industry as "a crying shame" (H.O.R.S.E.S.), a "cruel practice" (AWI), and "the ultimate betrayal" (Equine Advocates). Because of the strong emotional ties that have developed between humans and horses, many believe it is unconscionable to use them for food.

Congresswoman Connie Morella advocates banning the slaughter of horses for the use of human consumption. She states “Americans do not eat horses. We do not raise them for food. When told that our horses are being slaughtered for dinner in Europe, the vast majority of Americans is horrified and wants the practice banned” (Betraying our Equine Ally).

Technology

Technology has also impacted the speed and efficiency that horses are processed. It has also changed the method of communication and how the horses are documented. New technology in transportation plays a large role in the hauling slaughter horses to processing plants. Semi-tractors have more torque and horsepower to haul large loads. Hauling larger loads allow for economy of scale and reduce the shipping cost per horse. Because of this more horses can be loaded onto one trailer, which has sparked debate on transportation welfare. Animal transportation welfare is detailed in the welfare chapter of this report.

In an effort to increase productivity, processing facilities continue to upgrade technical equipment. Power tools for skinning, quartering, and cutting meat are used along with traditional butcher knives. Technology is used for boxing and preparing shipping. This equipment aids in the processing of horsemeat, but along with it come the dangers of high-powered equipment.

Through the PEST analysis, the main factors that influence the slaughterhorse industry’s macroenvironment have been detailed. Political

factors include proposed legislation as well as legislation concerning the transporting horses for slaughter. This study focuses on the political forces of H.R. 857. Social factors included the argument that horses are not meat animals and should not be consumed. Another social element pertains to welfare, depicting that slaughtering horses is inhumane. The economic description portrayed the size of the horse industry on the U.S. Economy. By knowing the overall size of the horse industry, the possible ban of the slaughterhorse trade can be measured in a proper perspective. New technology has changed the way that horses are transported and the method in which they are processed.

CHAPTER 3

METHODOLOGY

> To maintain credibility, an effective project will have to make an appropriate match between your methods and the issues which you are researching (Jankowicz).

This chapter outlines research methods being practiced and a description of the methods used for this project. Following the explanation of potential methods, those actually used in this paper are described. The following section describes why the methods were chosen, how they apply to the topic, and why other methods were not applicable.

Quantitative vs. Qualitative Data

The word quantitative is a derivative of the word quantity. Quantitative data are comprised of numeric results, statistics, and figures. Quantitative data are nonnegotiable and more permanent than qualitative data. Qualitative data assess the degree of excellence. Qualitative data answers the question "how good" or, in many cases, "how bad." Qualitative research data have become more popular in the past two decades in many industries, especially business. A book about grounded theory, a post-modernistic methodology explains:

> Interestingly, there is some evidence that managers are more likely to trust the findings derived from qualitative research more so than the findings of large-scale quantitative surveys, mainly as a result of the vividness of the data.
>
> [Herschman's] analysis revealed a great imbalance between quantitative and qualitative publications, and that by far the most prominent theme in both the 1980's and early 1990's was the use of quantitative models to construct and test consumer

behaviour theories (Goulding, p. 9:15).

A study of the supply of slaughter horses and the demand for their meat requires the use of both categories of data (quantitative and qualitative). As discussed previously, the proposal to ban slaughter horses is based on belief, emotion, and personal preference. Although a few statistics can be gathered and analyzed as quantitative data, qualitative information from personal beliefs should also be included.

Methods Considered

The main research methods commonly used to help explain a phenomenon are: quantitative—archival and positivism methods, and qualitative—constructivism, thematic analysis; phenomenology, ethnoscience; ethnography, discourse analysis; grounded theory, conceptual descriptions (Goulding). These methods will be described in the following sections.

Most research projects begin with the archival method of data accumulation. This is also known as the literature review, which is accomplished by reading and gathering written resources of past events to help understand the present. Interviews about past events are also a technique in gathering information. Through the study of the past, the present is better understood, and the future can be predicted. The archival method is dependent on past events, but nothing guarantees a predictable future.

Positivism searches for truth. It assumes that all mankind is fallible and lives in a complicated society. It finds truth in two ways, by logical reasoning

and by empirical evidence. The method is known to many as the traditional method (Donnell).

Similar to the scientific method, positivism formulates one specific hypothesis and then proceeds to test this hypothesis. The hypothesis is either rejected or advances to a theory. Because of this step-by-step process, it has also become known as the mechanical model for doing research.

There are many advantages in using a positivist view in research. The data is objective, scientific, and is free of theoretical assumptions. Because the activity is "out there," independent of consciousness, and ever occurring, many can observe the activity and arrive at the same conclusion. The method is controllable and predictable (Donnell).

Disadvantages of applying positivism are the same as the advantages. There are no theoretical assumptions or flexibility. The data are objective and therefore cannot be skewed to fit in many situations. The main disadvantage is statistics or hard data are not always available. A numeric value cannot always be assigned to a question. In this case, another research method must be included.

Constructivism searches for understanding rather than truth. Differing from the positivist view, constructivism views reality as subjective rather than objective. History, culture, and personal experience construct how people view the world around them. The researcher is part of the reality he or she seeks to understand, always a participant, and never just an observer. The defined truth is debatable and/or negotiable (Donnell).

The “grounded theory” method was originally created as a method for studying sociology. This method examines why people act in a particular way, which is very good in the study of buying behavior. Business disciplines found the strength in this method, and it was soon adopted by psychology, anthropology, nursing, social work, and education, as well as management. The grounded theory aids in the formation of a question and a hypothesis. Grounded theory is a research study method that allows the researcher to pass through a number of stages to refine the theory. It is an approach that helps the researcher look beyond the surface and embrace the issue (Goulding).

Primary data are often gathered through personal interviews and/or through person-to-person observations that can be used as data to help explain a phenomenon. The emphasis of the grounded theory method is placed on development and building, with a focus on everyday life experience.

Techniques

Positivism and other quantitative-based research methods use fully structured techniques. Structured questionnaires, face-to-face interviews using outlined questions are used to collect empirical data. Questionnaires can be delivered by the telephone or by postal mailings.

Collecting qualitative data utilizes semi-structured, open-ended techniques. Conversation, observance, interviews, focus groups, and visiting with key informants are sources of data (Goulding).

Case studies are a growing research technique that can be used to help

develop conclusions about a theory. A situation in the world, entity, or individuals can be outlined and then followed by tracking progress and viewing the consequences. This method is valuable as it allows a researcher to see the outcome of decisions made and can be applied directly to the case at hand. This method is very valuable in the study of a slaughter horse ban. The state of California banned the slaughter of horses for human consumption in 1998. The purpose and reasoning for the ban are similar to the occurrence in this study. In an effort to find the impact of the California law, seven personal interviews were conducted. Persons interviewed included individuals from the American Association of Equine Practitioners (AAEP), horse traders, horse rescue facilities, and horse racing association leaders. A small amount of information was also taken from horse advocate websites.

Methodologies Applied and the Reasons for Use

The primary research was based on the positivist method. Based upon the positivist method, the theory was stated followed by accumulation of data to either accept or reject the hypothesis. Dr. A.D. Jankowicz explains the importance of this step. "The objective(s) of a thesis should be clearly outlined. From the very start the reader should know what the project is geared toward and then can continue on how the results were found, leading to analysis and conclusion" (Jankowicz, p. 84).

The theory is: European countries depend on U.S. horsemeat exports to satisfy the demand for horsemeat as human food. A U.S. ban on horsemeat

exports will have a significant economic impact on the United States' supply of horses and Europe's demand for horsemeat.

The thesis question is: How will the proposed federal ban on horsemeat exports, if applied, affect the current supply of horses, the businesses involved, and the demand for horsemeat in E.U. countries?

Horse slaughter can be researched using many different methods. A researcher is advised to use at least two sources of data for information that is crucial to the argument. In this report qualitative data were compared to the quantitative data collected. This method made it possible to examine whether the patterns shown by the quantitative data matched the data supplied by the interviewees. In many cases it did not.

The first focus of the research was to explain the slaughter horse industry and its constituents. The archival method was therefore used to compile accurate information about the slaughter horse industry. Government, university, and private research on the slaughter horse industry is still in infancy and little documentation is available.

The explanatory chapter of this Thesis is a compilation of: journal articles; newspaper articles; multiple special interest groups and horse advocacies; government regulatory agencies—U.S. and E.U.; breed associations; professional opinion; and other equine interest associations.

These sources are documented, cited, and used under the fair use clause for academia. Sources were chosen from recognized writers and publishers. Even though care was taken to find reputable articles, ambiguities

and inconsistent information were found. For this reason, the archival method was supplemented with other methods to provide more accurate information.

The marketing tool, PEST analysis, was used to outline the exploratory overview of the slaughter horse industry. Marketers commonly use this tool to explain an industry's macroenvironment. The areas studied lie directly under the topics; political factors, economic, social, and technology.

The case study method was applied to evaluate the results of a ban on slaughter horses. The U.S. state of California banned the slaughter of horses for human consumption in 1998. The reasoning behind the ban is similar to the legislation being researched. Observance and the result of the last five years can be applied to the current research.

Primary Data Collection Methodology

The United States Department of Agriculture (USDA) has kept records on the slaughter horse industry for many years. The USDA has kept a record of how many horses have been exported live, or on the rail. The data used in this Thesis were collected from four main sources.

1. USDA records including departments Economic Research Service, Animal and Plant Heath Inspection Service and the National Agricultural Statistics Service
2. European records from MHR Viandes (France), DEFRA (U.K.), and Stat.it (Italy)
3. Records from slaughter facilities

4. Dealers records.

The supply of horses from the United States to countries throughout the world was found on the FATUS database. The demand for exports was found through MHR Viandes in France. This data were then formulated through Excel spreadsheets and made into graphs. The graphs aided in a visualization of the trend in the consumption of horsemeat in Europe.

Financial and Regression Models

Discounted cash flow (DCF) is a finance tool used to evaluate a return on an investment. This model aids in calculating the net present value (NPV) and the rate of return of an economic enterprise. This DCF model was used to observe the change in horse prices before and after a slaughter horse ban. Slaughter is currently used as a salvage method of regaining monetary loss resulting in a positive net value. Following a slaughter horse ban, the horse cannot be sold for slaughter and, thereby, results in a decrease in the salvage value. This information allowed the researcher to estimate the total cost implications on the horse industry. Horses disposed of by slaughter are given a positive salvage value. Other methods of disposal are an expense for the producer, and, therefore, the DCF model also used a negative salvage value. The change in NPV from a positive to a negative salvage value showed the monetary impact on those currently using slaughtered as a disposal method.

A simultaneous econometric model was developed and estimated to find the most significant factors that have affected cull horse prices over the past

decade. The structural model includes a supply and a demand equation as supply and demand is jointly determined. The equation functions include; the volume of horsemeat exports from the U.S. to Europe and the value of those exports. Beef consumption in France, examining the changes in beef consumption compared to the consumption of horsemeat. A dummy variable is applied in effort to study the impact of mad cow disease (Bovine Spongiform Encephalopathy) on the horsemeat market. Per capita income for France is included to observe the correlation between income and the consumption of horsemeat. Imports from countries other than the U.S. is used to monitor the changes of horsemeat exports during the study period. Input costs are also included to study the impact that costs have on the export market. Data from 1990–2002 for each variable are included in the regression model. It was necessary to convert some of the variable into like terms to maintain consistency in the model.

Qualitative Data

Qualitative data were gathered using the grounded theory methodology. The grounded theory method was not used to formulate the theory but was used as a method of gathering professional opinions and observances while including the difference in culture and paradigms.

> Usually researchers adopt grounded theory when the topic of interest has been relatively ignored in the literature or has been given only superficial attention. Consequently, the researcher's mission is to build their own theory from the ground. (Goulding).

Adam Smith postulated that the “invisible hand” rules an industry. Government intervention “shocks” the natural, evolutionary market behavior taking it out of equilibrium. Observing history or using the scientific method can study evolutionary change. A ban on slaughter horses will possibly create an economic shock to both the U.S. and E.U. horse industry. For this reason, grounded theory methods incorporating professional opinion and allowing for cultural differences should be applied.

Semi-structured questionnaires were drafted for the use in face-to-face interviews. The interviews were conducted with two abattoirs and butcher shops in five European countries. The questions were qualitative open-ended questions that allowed the interviewee to elaborate on their opinions, beliefs, and personal biases. In order to maintain the same basis for each interview, the drafted questions were used as a guide. As these are working companies, all interviews were conducted on breaks, lunches, or during slow periods.

The first interviews were conducted with a U.K. abattoir. The manager and inspecting veterinarian were interviewed. Questions included an evaluation of horsemeat demand and the possible consequences of a U.S. slaughter horse ban. At this point, many of the questions were still exploratory and many of the questions were not necessarily repeated in other interviews.

Another interview was conducted with the largest Canadian abattoir. The same questions necessary for the argument were repeated to both the U.K.-based abattoir and the Canadian abattoir.

Interviews were also conducted in the main horsemeat eating countries.

A professor of the Florence University Institute of Animal Production supplied information about horsemeat consumption in Italy. The next interview was conducted in Bern, Switzerland. Bern's Pferdemetzg is the largest horsemeat supplier in Bern and one of the largest horsemeat retailers in Switzerland. Again, the same outline of questions was used to examine the possible outcome of a U.S. slaughter horse ban. A butcher in Brussels, Belgium, was interviewed. This butcher had recently discontinued selling horsemeat and was focusing on other meat products.

In the United States, interviews were conducted with slaughter horse dealers, veterinarians, and USDA authorities. Questions were built on a semi-structured format leading to opinions on what would happen to the horse industry in the United States if the slaughter horse ban were introduced.

The statements from equine organizations were gathered by request from the researcher. Seven different organizations from the United Kingdom and the United States were asked to provide a statement on their opinion of a slaughter horse ban. Four responded by either sending the statement directly or by referring to a previously published statement on a website.

CHAPTER 4

CASE STUDY: THE CALIFORNIA SLAUGHTER HORSE BAN

In 1998, Proposition Six, Save The Horses, was placed on the ballot amidst 51 other initiatives. Over four million voters caused Proposition Six to pass by a 60% margin (Save the Horses).

Entitled, "The Prohibition of Horse Slaughter and Sale of Horsemeat for Human Consumption Act of 1998," Proposition Six makes slaughtering of California horses illegal for human consumption. Now enacted by California, it prohibits anyone to possess, buy, sell, or export from California any part of a horse for human consumption (Save the Horses).

This section outlines the arguments and reasoning for the California ban. It provides opinions against the ban followed by some hindsight from individuals and associations dealing with horses in California.

Issues Behind California's Proposition Six

The Save the Horses initiative exhorts that horses should not be slaughtered but rather should be protected from slaughter. California polls showed that 93% of the voters opposed horse slaughter and 88% oppose the eating of horsemeat. "The people want horse slaughter stopped!" declares the California organization website (www.savethehorses.com). Many celebrities, racetracks, horse organizations, law enforcement personnel, politicians, and district attorneys backed Proposition Six. The website mentions that legislators were

failing to do their part and it was time for the people to put forth a proposal ballot (Save the Horses).

Decision Research conducted a survey by questioning 600 citizens via telephone. The majority of the California citizens polled believed that slaughtering horses for human consumption should be illegal. They believe that horses are not considered meat animals and therefore should not be slaughtered for human consumption. The majority of this survey also viewed horses as companion animals rather than livestock. Sixty percent of the people polled did not know that the industry was in existence and thought that it was already illegal (Save the Horses).

The Reasoning for Proposition Six

Two main ideas underpin California's Proposition Six. These ideas also correspond with the reasoning behind H.R. 857. Horses are not typically raised as a meat product and Americans do not typically eat horsemeat. This is unlikely to change in the foreseeable future. Many Californians consider the horse to be a companion animal. "We would no more allow the regulation of the slaughter and export of our dogs and cats to countries where their meat is eaten than we should our horses" (Save the Horses).

Horses are a part of the American heritage. Humankind has domesticated them as working partners and friends. The U.S. paradigm encompasses the belief that horses are raised for work, pleasure, and recreation, but not for food or fiber.

Currently, there is no requirement for a killer buyer to disclose his/her intended purpose for purchasing a horse. Horses that are sold at auction may be sold for slaughter as readily as they are sold as a companion animal.

Another justification for Proposition Six is related to horse welfare and humane treatment of slaughter horses. Differing from the European Union, horse slaughter in the United States is not seen as humane euthanasia, and therefore, the horse undergoes much pain and suffering (SAPL). These arguments are listed in detail in the welfare chapter of this document. The same arguments are the factors in the proposed nationwide slaughter horse ban, H.R. 857.

California's Unwanted Horse Solution

According to the Save the Horses website, horses that are no longer wanted or cannot be properly cared for should be humanely euthanized by a licensed veterinarian. Horse carcasses would then be hauled to a rendering plant or to an appropriate landfill. All costs are the responsibility of the owner (Save the Horses).

Horse owners incur many costs when purchasing a horse. Feed, shelter, grooming, shoeing, worming, and inoculations are paid for by the owner. If someone can afford to own a horse, they have a responsibility to pay for the disposal of an unwanted horse. One of the reasons that the horse owner does not pay to euthanize and dispose of the horse is because horse slaughter is an available alternative. Proposition Six, Save the Horses continues stating that

horse slaughter is inhumane and that the owner is responsible for humanely euthanizing the horse and paying for its disposal (Save the Horses). Proposition Six does not guarantee individual responsibility or stop horse abuse. It only ensures a humane euthanasia (Save the Horses).

Penalties

Violations of Proposition Six carry some of the strongest animal protection consequences in the state of California. The offence of horse slaughter is a felony punishable by imprisonment for up to three years. Sale of horses for slaughter is a misdemeanor offence with penalties of $1,000 USD and jail confinement of no less than 30 days and no more than two years (Save the Horses).

Opposition to Proposition Six

The Libertarian Party of California did not support Proposition Six. Although they agree that horses, among other species of animals, should be treated humanely, they believe that Proposition Six will not serve its intended purpose.

No horse slaughtering facilities exist in California. In order for horses to be slaughtered, they must be exported to other states. Horse buyers in other states may purchase horses without disclosing their intent to sell them for slaughter. In this respect, the proposition will not “save the horses” as it fails to attack the heart of the problem (Libertarian Party Director).

Libertarians argued that Proposition Six criminalizes the consumption of certain food. The government should not tell people what they can or cannot eat. California has a very diverse culture. Native Asians and Europeans are well-established, and it seems unreasonable to discriminate against what they eat. Proposition Six discriminates against using other livestock animals as pets. It will also place a burden on international commerce and cause economic hardships for California's equine businesses. This proposition reserves the harshest penalty for animal abuse. Fines and imprisonment are direct results of an offense. This will place horsemeat eaters in overcrowded prisons before murderers and rapists (Libertarian Party Director).

2003 Hindsight to Proposition Six

Little research has been conducted to examine the results of Proposition Six. In fact, there is no statistical data published featuring changes in production, price, or welfare issues. The only information available is by means of inference from the nationwide census. In an effort to find the impact of the California law, seven personal interviews were conducted by the author. Persons interviewed included individuals from the American Association of Equine Practitioners (AAEP), horse traders, horse rescue facilities, and horse racing association leaders. Information was also taken from horse advocate websites. Three of the contact names were withheld to maintain confidentiality.

Regulation

The regulation of Proposition Six lies in the jurisdiction of the local authorities. Five out of the seven interviewed did not know how Proposition Six is being regulated. It was indicated in a few of the interviews that they believed that no enforcement was occurring at all (Bake; Schonholtz).

The practice of horse slaughter has been outlawed for five years. According to the interviews, there was not any knowledge of anyone being cited or charged for an offence against Proposition Six (Schonholtz). Horses can be sold to neighboring states for events, ranching, and recreational use. The buyer, in turn, keeps the horse for a time and then sells the horse for human consumption. California breeders “don’t know” the intent of the new owner and therefore cannot be prosecuted. Horses are being transported out of California illegally, but with current systems it is very difficult to track. One interviewee also pointed out that California law enforcement is already too shorthanded in keeping up with crime to be watching people trade horses (Anonymous).

Mr. Kroupious of Bouvry Exports indicated that he will not purchase horses that have come out of California. “To my knowledge, no horses have been exported from California to Canada for slaughter. The risk and penalties are just too high to justify the return of a few hundred dollars” (Kroupious).

Welfare Implications

An interview with Jim Warren brought up the issue of an increase in horse abandonment since the proposition was enacted. Mr. Warren, owner of an equine rescue facility south of San Francisco, has seen an average of 25 abandoned horses per year since the ban. This is a very scary occurrence, says Warren, eventually an abandoned horse is going to end up on the road. According to Warren, the law will not change until an unwanted horse finds its way onto a highway and someone is killed (Warren).

Horses have been found without an owner, brand, or identification with which to find the responsible person. In the last few years, there have been several cases in which horse owners have moved out of California and left their horses behind (Warren). Reports have also been made where a rancher/producer finds a new horse on their farm. In some of these cases, the horses are malnourished and end up dying within a few days time (Anonymous B).

Another situation that has been evident as a result of Proposition Six is the decrease in the value of horses. Horse owners will try to sell a horse only to find it impossible. Owners who cannot sell horses take them to the animal rescue facility and leave them. Warren's animal rescue facility has received numerous calls this year to pick up horses that are no longer wanted. It costs approximately $100 per month, per horse, to care for the animal until another owner can be found. (Note that this figure is less than the $195/per month

listed earlier in the cost to maintain horses). Unfortunately, it is becoming harder to find a good home for some of these horses (Warren).

There has also been an increase in the number of thin and crippled horses at auction. Auction yards have had to place restrictions on which horses they will accept. Emaciated and severely crippled horses are no longer accepted at many of the auctions. Owners should euthanize these horses, but there are still many who do not accept the responsibility of disposing of their expendable horse. Rather than euthanizing the animals and hauling them to a rendering plant, some owners take them to auction week after week and the horse continues to get thinner. (Anonymous C)

Poor people own horses too. Eighty percent of horse owners have the money to care for a horse properly, but there is still 20% that feel the need to have a horse but do not have the funding to care for and properly dispose of it. When horse prices go down, horse ownership appears feasible. Anyone can buy a horse that is sold at auction for a few hundred dollars or less. “We [California horse owners] do not see problems with owners until after the horse is purchased. Then we begin to see more thin horses” (Anonymous C).

Approximately 10,000 horses must be euthanized in California each year. People need a method to dispose of their horses and find such options to be limited. Many landfills will not accept livestock, and it is illegal to bury horses in many California counties. People are looking for alternatives, and there are few available. Soon they get desperate and abandon their horses in a manner similar to a cat or dog, leaving the animal on the street or in the neighbors yard.

The problem is that some people are willing to pick up a dog or cat but few people are capable of picking up a horse (Anonymous B).

Economic Impact

The California horse industry is still thriving (Equine Advocates). A slaughter horse ban has not kept producers from raising horses. According to the people I interviewed, no lasting effect has been the result on the number of horses produced or on the average price of a horse. A director of California's Thoroughbred Racing Association reports that the ban has created little impact on horse production. The cost to the producer has increased, but not enough to affect how many horses they are breeding (Anonymous B).

The horses most affected by California's slaughter horse ban are low-value horses. At one time a sound 1,100 lb. horse was worth $.40 lb., or $440. Today, the same horse is only worth $.10–$.20 lb. (1,100 lbs. * $.15 lb. = $165), a difference of $275 (Warren). Horses that are partially sound and may become unrideable are worth less than $.10 per lb. Unsound or unrideable horses are now worthless. They actually carry a negative value because the owner will have to find a method to dispose of them. In California, it costs $500–$1,500 to dispose of a large animal, depending on the method used. Many of the landfills do not accept large animals, so it is necessary to explore which landfills will dispose of the horse (Warren).

California Interviewee Suggestions

There will always be horses with little to no value. The people interviewed mentioned that they do not like the idea of horse slaughter, but right now there is not a developed alternative. Alternative disposal methods must be established so that horses are not left to starve on an empty pasture.

People with large animal knowledge and skills must provide for these horses. The small animal humane societies are neither experienced nor trained in dealing with horses. If they take over the care of these unwanted horses, the human society will incur financial problems. Horses have a much higher maintenance cost than dogs and cats. There is an enormous need to increase large animal shelters and rescue facilities (Warren).

The interviewees also mentioned that a large number of good horses were sold for slaughter during the early 1990s when horse slaughter prices were high. Horses were slaughtered that could have been sold for other purposes. This can be viewed as a problem because horses without flaws may be sold for slaughter rather than as a useful horse. Now that slaughter horse prices are nonexistent, Californians have the opposite problem; it is very expensive to dispose of old, crippled, and dangerous horses. Ideally, the price of a slaughter horse will be somewhere in the middle. Through this, unsound and problematic horses can be disposed of, steering away from a life of neglect,

while good horses are still desirable, rather than being sold for slaughter (Anonymous C).

CHAPTER 5

SLAUGHTER HORSE WELFARE

Horse welfare is a very important factor in the development of legislation. Much of the literature surrounding the slaughter horse bans includes comments regarding animal welfare. This chapter discusses welfare arguments related to bans and scientific research done to study horse welfare. This chapter contains some strong wording and opinions from activist groups, associations, horse dealers and scientists. As the researcher, I included this section to help the reader understand the arguments from both sides and the research that has been conducted. The opinions are cited and **do not represent the opinion of the researcher.**

> Today, people dip in and dip out of horses like new handbags. When the new horse comes the old one is put in the back of the stable. But unlike a handbag, the horse in the back of the stable is a welfare issue.
>
> If the slaughter horse industry in the U.K. were to disappear, it would depress everything else into lower welfare positions. More horses will end up into this category with more horses hanging around. It is part of a chain that means that horses drop into the lowest quality of life that exists (Potter).

Horse welfare begins in the owner's paddock. Most horses are bred, raised, or purchased for a specific purpose. The owner would like to race, show, compete, or enjoy the horse for recreation and companionship. Welfare issues begin when the horse and/or owner are no longer able to achieve this desired goal.

Financial concerns may make it difficult to achieve the desired use of the horse. Because the majority of U.S. horses are used for recreation, during economic downturns more horses are for sale, which results in lower horse prices. During these periods, owners may expect a loss on their investments and choose not to sell.

Another common problem is the seasonal nature of pasture feeding. Owners may be able to pasture horses during spring and summer months but do not want to bear the expense of feeding the horse through the winter. At this time, the owner must decide whether to sell the horse or invest in harvested feeds. Instead of taking a loss, owners keep horses through the winter and minimize expenditures, resulting in lower quality of life for the horse. Potter describes this pattern when discussing the flow pattern of slaughter horses at his abattoir.

> It has been very quiet here for the last couple of weeks because it has been nice weather. People have decided that the horse will need to be put down this year but the weather is nice and right now it is very nice to have a horse to ride around the paddock. When it starts getting colder weather and the thought of, 'we need to get him in (inside) again, well we better get him put down.' Come September and October when people start thinking they have to have the horse in and we haven't bought the straw or the hay for the winter, and we are going on holiday, well what do we do with the horse. I guess we had better have the horse put down (Potter).

Table 2. Horse's Minimum Maintenance Costs

	Average Cost/ Horse/Month	Average Cost/ Horse/Year
Board (own facility)[a]	$20 [b]	$240
Hay consumption (16.5–20 lbs/horse/day)	80	960
Grain @ 4 lb./day	24	288
Shoeing (7 X per year)	48	576
Deworming 6 X per year	6	72
Vaccinations 2 X per year	9	104
Float teeth 1 X annual	8	100
Ave. Cost	$195 per month	$2,340 per year

Note: Averages were calculated on a per year basis from the sources cited. Monthly figures are calculated from the yearly amount divided by twelve.

[a]Considered as overhead, therefore, decreases through economies of scale. Varies considerably from state to state.
[b]Maintenance horse costs are the average calculated between three sources.
http://www.petplace.com/Articles/artShow.asp?artID=786
http://www.easyhorsesearch.com/horse-costs.html#(5)
http://www.horsekeeping.com/horse_management/cost_of_keeping_a_horse.htm

Transport Handling

Transport is another contentious issue among legislators, equine associations, and horse enthusiasts. The Animal and Plant Health Inspection Service (APHIS) has agreed that slaughter horses have special needs that differ from horses intended for other purposes. In order to provide humane transport, these special needs must be taken into consideration.

One problem with slaughter horse transport is that it is not imperative that the horse arrive in perfect condition. While there is an incentive to fatten the horse for a higher yield price, this incentive does not necessarily accrue during transport conditions. Improving these conditions requires investment in vehicles and allowing more space for each horse. These factors yield no economic gain for the dealer, and such expenses are typically minimized. Ideally, horses being transported for slaughter would be hauled in the same manner as expensive competition horses, but the incentives are minimal. For this reason, legislators and regulators have required standards for acceptable treatment for traveling slaughter horses.

Horses intended for slaughter may be hauled to slaughter facilities in many ways. Some owners will haul their own horses to the abattoir while others may simply sell a horse directly or through an auction. Dealers, also known as “killer buyers,” purchase horses from individuals or auctions and then prepare them to be shipped to the processing plant. When a full load is gathered, the horses are shipped to the processing facility.

An Equine Advocates, Inc., leaflet reports:

> Slaughter horses are brutally handled. They are forced onto trucks (including inhumane double-decker cattle trailers--illegal in some states), and are often shipped hundreds of miles, sometimes for over 30 hours, without food, water or rest (Equine Advocates, p. 2).

Trailers are built of aluminum and steel. The aluminum “floating docks” and the base of the trailers may become slippery. Aluminum floors, urine, and fecal matter result in precarious footing. Motions from the trailer make the horse lean and balance. A slippery surface on a tightly packed trailer increases the chance of a horse slipping and becoming unable to return to a standing position.

During transport the horses are susceptible to small injuries. Road bumps and turns may result in horses bumping their noses and mouths, making them bleed. Scrapes of hair and skin may occur in the top of the animals head, along its nose, or on the legs (Stull).

Europe is not a stranger to the challenges of horse transportation. Thomas explains;

> Horses suffer on their journey to abattoirs. Italy is the main destination for around 90% of the animals and the Polish horses destined for slaughter are loaded up and sent on journeys covering 2,500 kilometers and lasting up to 90 hours. Many will receive no rest, water or feed en route and on most journeys at least one horse will die (Thomas).

Slaughtering Facility Welfare

Upon the arrival at the slaughterhouse, horses are herded into overcrowded holding pens. They are electrically prodded into the area where they are

stunned with a captive bolt. This method is repeated if the horse is not rendered unconscious with the first shot. While the horse is still alive, the horse is hung by the rear leg, the throat is cut for the animal to bleed out and the body is dismembered (Save the Horses, Equine Advocates, AWI, SAPL, H.O.R.S.E.S).

An article by Heyde of the Animal Welfare Institute reports his experience at a Texas horse slaughter facility.

> Only a few horses at a time were removed from the truck so many were still on board when I left. When some were moved off the trailer, workers poked them with long fiberglass rods through holes on the side of the trailer. The horses, typically very sensitive animals, slid and fell down the ramp only to be whipped by another worker's rod. All of the horses at the facility exhibited fear typical of "flight" behavior in horses, pacing in prance-like movements with their ears pinned back against their heads and eyes wide open.
>
> Running across the floor of the barn was a grate-covered drain about three feet deep. A section of the grate was missing in one of the stalls through which horses were being forced. Because they were crammed into a space and panicking, each horse fell into the open hole, unable to get out since the floor was wet and slippery. Workers continue to beat the horses until they were able to throw their bodies out of this hole. Due to the overcrowding and panic, a large male got his leg hooked over one of the upper rails. Again, workers proceeded to beat him continually until the horse lunged forward gouging his leg open on the solid metal fence, which forced his leg free of the rail (Heyde)

Several different methods are available for stunning and killing horses. Some facilities use a .22-caliber rifle. The horse is shot just above the center of the eyes, through the skull, and into the brain. A more widely used method is using a captive bolt stun gun. This pneumatic device shoots a stream of air into the animal's brain, rendering it unconscious. The horse is then killed by cutting

the throat and allowing the animal to bleed out. A criticism of this method is that the horse is not always fully unconscious. If not properly administered, the captive bolt may not render the animal unconscious on the first blow (H.O.R.S.E.S.).

Another welfare element is that horses have been domesticated and bred as intelligent animals. Many articles argue that horses think and feel more so than sheep, cattle, or other commodity bred animal. Horses sense when they are in danger. This triggers a "fight or flight" response that allows them to escape the dangerous situation. This results in the horses acting nervously and shaking while waiting their turn to be killed. This stressful situation is used as one of the many welfare arguments against slaughtering horses.

Transport Legislation

In response to the problems concerning transportation welfare, APHIS has released the Final Rule. As previously discussed, the Final Rule document delineates guidelines for transporting slaughter horses. This document was enacted in February of 2002. These regulations include the United States and Canada, with a pending agreement with Mexico.

The Final Rule focuses on individuals in the slaughter horse trade. The regulations apply to any individual, partnership, corporation, or entity that engages in the commercial transport of more that 20 equines to slaughtering facilities each year. Persons selling fewer than this are not bound by the Final Rule. The Final Rule regulations are as follows: (Cordes et al.).

Certificate

- Each horse must have a U.S. origin health certificate (VS 17-140). The information includes the owner's/shipper's name, address, and phone number. This certificate should also contain the receiver's or destination information. The vehicles license and registration numbers should be listed.

  The horse's sex, color, and markings will be listed on the certificate, and they should be tagged with a USDA bar code and a production date.
- The certificate, either typed or legibly handwritten, will include the equine degree of fitness statement. This statement describes the horse's fitness for travel and outlines any special needs that the animal may have. This statement must be written within two hours of the horse's journey.

Hauling

- The commercial transport vehicle used should have adequate ventilation, should be free of protruding, sharp objects, and reasonably clear of manure and urine. It should be in good mechanical and functional repair. Doors should have sufficient height and width. Ramps should have a nonslip surface and should not be set over a 25 degree angle. All configurations and vehicle detail are not outlined. Compliance lies under performance-based standards.

- The owner/shipper must give each horse an opportunity to eat and drink for a period of not less than six consecutive hours immediately before loading the animal in the vehicle.
- Each horse is able to bear weight on all four limbs and is able to walk unassisted. At any time during the journey, if the horse becomes incapacitated, the animal should immediately be examined by a veterinarian. In the case that the animal requires euthanasia, an equine veterinarian should use phenobarbital, choral hydrate, combination of these, or gunshot. After an equine fatality, the owner/shipper must contact the nearest APHIS veterinarian as soon as possible to have the equine examined.
- The horse cannot be blind in both eyes and the horse must be older than six months. If a mare is pregnant, assurance must be made that the mare is not likely to foal during transport.
- During transit the horses should be checked by the shipper no less than every six hours. Horses should be checked for physical condition and to ensure that all regulations are being followed.
- Horses may not be loaded on the conveyance for more than 28 hours. Moving or standing, after 28 hours, the horse must be unloaded and left to rest with food and water for six consecutive hours before again being reloaded.

- It is recommended that aggressive horses and/or stallions be separated from the other horses. This is only a recommendation and lies under the performance-based standard for the owner/operator to make a judgment.
- Upon arrival to the slaughtering facility, the shipper is responsible for ensuring each equine has access to food and potable water. The USDA representative has immediate access to examine the equines. The shipper must be on the premises until after the horses have been examined. If the shipper arrives after hours, the driver must return to the premises immediately the next working day (Cordes et al.).

Double-Deck Trailers

Tractor-trailers with double-deck trailers (also known as pot-bellied trailers) are the most widely used conveyance in the United States for slaughter horse transport. By using collapsible floors, tractor-trailers can be separated into an upper and lower deck (figure 1).

Within five years following enactment of the Final Rule (February 2007), slaughter horses will no longer be allowed to be hauled in both levels of double-deck trailers. The trailers may still be used if horses are loaded on a single level and the collapsible decks are moved so that horses may have the headroom needed to stand comfortably. People have debated the use

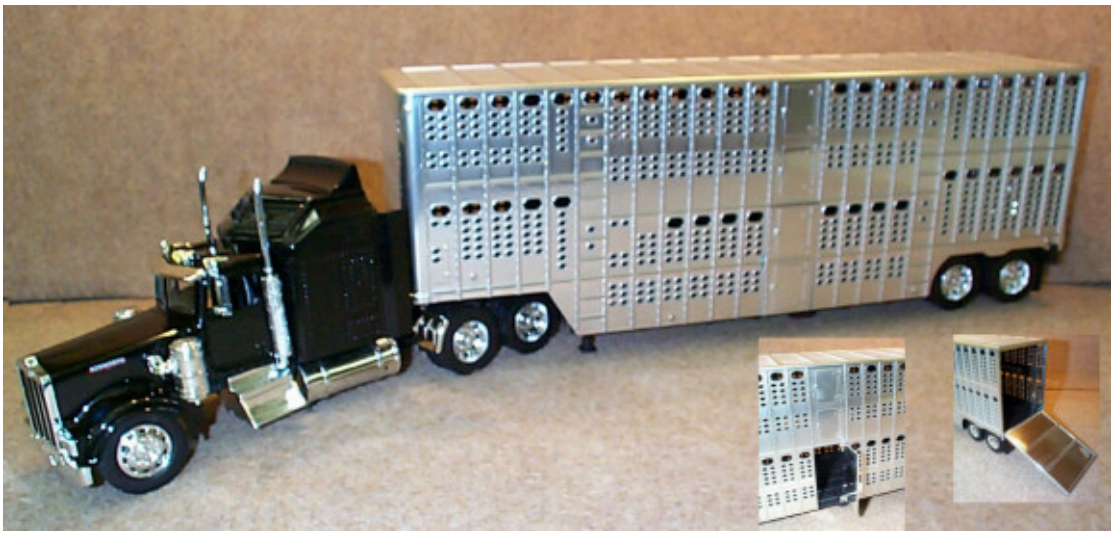


Figure 1. Tractor with a Double-Deck (Pot-Belly) Trailer

Figure 2. Tractor with a Single-Deck Trailer

of double-deck semi trailers for many years. The state of Pennsylvania enacted legislation banning the use of double-deck trailers in June of 2001.

The Final Rule regulation on double-deck trailers did not take place immediately for two reasons. Many businesses, including trailer manufacturers, transport haulers, and the horse producer will experience an economic impact from the ban of double-deck trailers. A five-year deferment will allow individuals and entities to amortize their vehicle investment and plan different methods of transport for the future.

Offenses and Penalties

Many other items are not listed in the Final Rule, but have been considered. Issues such as poking and electric prods, transport and corral cleanliness, and other welfare factors have been discussed. The drafters of the rule thought that a comprehensive list of regulations is neither necessary nor appropriate. The Final Rule relies on performance-based standards. The Final Rule is a guideline to create a safe transportation environment. Horses are examined during certification and loading. After transit, horses are again examined and checked for injury, sickness, or any maltreatment. Signs of an offense are investigated by the USDA inspector. For each equine injured, the owner/shipper may be fined up to $5,000 USD. Because of this new legislation, it is in the best interest of the company to participate in an available educational program regarding humane transport, which includes safe driving procedures.

Killing Method Legislation

The USDA regulates equine slaughter facilities. Similar to other species of livestock, each horse is inspected by a USDA representative ensuring welfare and quality assurance. USDA representatives act under the Humane Methods of Slaughter Act of 1958. The humane methods of slaughter include: (1) prevent needless suffering, and (2) safer and better working conditions for persons engaged in the slaughtering of livestock (AWI).

Welfare Scientific Research

In 1997 the U.S.D.A. initiated funding for studies on the transport of equines. Prominent researchers Dr.Ted Friend of Texas A & M University, Dr Temple Grandin of Colorado State University, Dr. Carolyn Stull of University of California Davis, Dr. Timothy Cordes (APHIS), and many others.

These studies concluded that the level of fatigue is the least serious consequence when transporting horses. Environmental and management conditions cause much more stress on the horse than that experienced while driving. Specific transport stressors that were documented include: (Moreton)

- Handling
- Loading
- Unloading
- Separation from familiar physical and social environments
- Confinement

- Vibration
- Changes in temperature and humidity
- Inadequate ventilation
- Deprivation of food and water

Weather and climate play a significant role in the level of dehydration of the horse. Dehydration occurs much more quickly when animals are hauled in hot climates and in trailers with limited ventilation. Stull's research found that horses have an incremental rise of dehydration in the first 24 hours and significant problems in the hours beyond 24-27 hours. In hot weather, serious dehydration occurs in the hours following the first 24-hours (Stull).

Serious dehydration is a concern because it increases the risk of colic. Lack of moisture may result in an impaction of the lower intestine. In many instances, during transport, feed rations are changed from a green pasture to pellets, to which the horse's digestive system is not accustomed.

The position of the horse may also affect the stress level of transport. Horses transported backward or at a 45-degree angle showed fewer signs of stress than those transported facing forward. This study did not state a preference between a horse being tied backward and a loose horse turning to ride backward (Smith et al.).

A survey carried out by Stull (1998) found that 92% of horses arriving at the processing plant were healthy and in good condition. The study included 63 trailers with 1,008 horses intended for slaughter and reported that the

overwhelming majority arrived in good condition. Only 42% of the horses were transported on double-deck trailers. This same study showed that 1.5% of the horses were unfit for travel. Pre-existing conditions included emaciation, laminitis, fractured limbs, and weakness. One of these horses died in transit and another died shortly after arrival. Poor condition prior to arrival and transport was more frequent (6%) than injuries that occurred during transport (2%).

Stull also found that horses transported in double-decker trailers have a higher rate of abrasions and lacerations, but suffer lower chronic stress levels than horses hauled in straight deck (single level) trailers (Figure 2). More floor area, (1.40–1.54 m^2/horse) compared to (1.14–1.31 m^2/horse), resulted in fewer falls. Stocking density and driving conditions both made an impact on the number of falls during transport.

Waran and Cuddeford (1995) found that the physical stress of transport results in fatigue and weight loss. Weight loss is increased with the distance traveled (3% at 720km). The weight lost was not regained, even after an evening's rest. In some of the longer hauls (720 km), it took up to three days to return to pre-transport weight.

A U.K. study on the welfare of slaughter horses revealed that "The overall results suggest that due to the low incidence of stress at the two abattoirs observed, there is no real cause for concern regarding the welfare of horses at slaughter" (Buckley and Moreton).

Buckley and Moreton researched pre-slaughter stress levels in horses. In livestock species such as cattle, sheep, and pigs, a high pH level is associated with stress prior to slaughter. Two analyses were performed on the two abattoirs in the United Kingdom. Ninety-eight (n=98) carcasses were examined at one abattoir, ninety-five (n=95) at the second.

The researchers took samples from the longissumus dorsi muscle and post-mortem pH was tested approximately 24 hours after slaughter. pHf is a method to study stress levels. A horse will burn more glucose during high levels of stress than if stress-free. In stressful situations, lactic acid is released into the blood stream. Lactic acid is necessary during rigor mortis to produce higher quality meat as lactic acid absorption is a determinant of tenderness. After being released into the blood stream, the needed lactic acid is lost when the horse is bled out.

Age and breed of horse also affected pH levels. Horses that were over 21 years of age yielded a higher pH in the meat. Ponies also had a higher pH than did light horses in the study.

Buckley and Moreton (1997) also examined plasma cortisol concentrations in the horse. Plasma cortisol is a steroid hormone that is released under stress to increase energy, or the fight/flight response. Plasma cortisol amounts were higher in Abattoir One than Abattoir Two. It was concluded that it resulted from differences in transport. Horses that had traveled between 50 to 100 miles showed higher concentrations of plasma cortisol. Horses traveling further than 100 miles began to show a decrease in

the amount of plasma cortisol. It was concluded that horses adapted to the environment after traveling greater than 100 miles.

The reason for slaughter was the other significant factor in high cortisol amounts. Horses with clinical conditions, chronic pain, or forms of laminitis demonstrated higher concentrations of cortisol. A higher degree of pain is likely when these conditions are present, and it was concluded that these conditions could have been a contributing factor to higher cortisol amounts.

Other factors examined were the horses' sex, approximate age, breed, source, distance traveled, time spent at the abattoir, and reason for slaughter. The results showed that stress levels were slightly higher, but not significant, at the first abattoir than at the second. The horses in Abattoir Two were more often pastured at the facility for longer periods of time. During this period, horses adapted to the surroundings of seasonal changes in temperature, nutrition, and social grouping. Abattoir One horses were more often delivered the night before or the morning of slaughter. Social regrouping took place in the pens for short periods overnight or a few hours in the morning. Insignificant factors included the sex of the horse, its source, cortisol levels, the reason for slaughter, and the distance traveled (Buckley and Moreton).

Overall, the study demonstrates that horse stress levels were not significantly different than other species of livestock animals in transit for slaughter. There are handling methods that can be introduced that will reduce the level of stress that were described previously, but in the study of the two U.K. abattoirs, it was concluded that there is not a welfare concern for horses

slaughtered for human consumption. Many factors inside and outside the trailers must be considered. Humane transport of horses will include but is not limited to (Buckley and Moreton):

- Pre-transport planning to lower stress levels; consider the schedule either for competition or business transaction
- Temperature and time of day
- Rush hour traffic
- Border crossing and Customs
- Know locations of stabling facilities and veterinarians en route
- Number of transport attendants and their accommodations
- Strive to maintain feeding schedules and consistency of feed. Stemmy roughages are recommended during transport
- Limit social regrouping stresses around major transporting periods
- Limit transport stressors such as confinement, noise, movement, lack of previous exposure/experience, exhaust fumes, air temperature changes, humidity, number of micro-organisms inhaled

The desired result of these associations and government officials is to see that slaughter horses are treated humanely. The methods which have been researched are for the welfare of the horse, no matter the intended use of the horse. Horses that are intended for slaughter can be transported with the same level of comfort as a race horse on the way to competition. A much more

humane system is where the horses are killed at the point of origin and the meat transported, chilled or frozen, to the point of sale (ILPH).

Breed Association Statements concerning horse slaughter

American Quarter Horse Association

The American Quarter Horse Association is one of the largest breed associations in the United States. The AQHA currently has over four million quarter horses on record in countries throughout the world. AQHA members depend on the Association to provide information, quality events, and brand recognition.

The AQHA has released a statement concerning horses that are slaughtered for human consumption. In a document entitled “Talking points on legislation banning the processing of horses for Human Consumption,” the AQHA discusses twelve points and concludes that “A federally-imposed ban is not in the best interest of the horse’s welfare” (AQHA). The critical issues are unwanted horses, owner responsibility, and animal welfare.

Many believe that a federal ban on horse slaughter for human consumption will not solve the problem of unwanted horses. In fact, a ban on slaughter horses may have the opposite effect. If horses have no value and cannot be sold at auction or by other methods, there is a high probability neglect will occur.

The AQHA strongly believes that the responsibility to care for the horse lies with the owner/breeder. Owners have the right to manage their horses as

long as they are treated humanely, with dignity, respect, and compassion. Even though this responsibility is evident, they recognize that 1% of the American horse population is unwanted and thus more likely to be the subject of abuse if there is no venue for sale. Through the international market, a price floor provides horses with a positive economic value.

The AQHA promotes horse welfare in all stages of a horse's life. Horse transportation is federally regulated by the USDA. Horse slaughter is also regulated by the USDA under the Humane Methods of Slaughter Act of 1958. The AQHA is concerned that a federal ban on slaughter horses will result in horses being exported to Canada or Mexico, where welfare regulations are not as stringent.

The AQHA applauds welfare, rescue centers, adoption agencies, and all others that support alternatives to horse slaughter. Funding new establishments will help increase the opportunity for horses to live a long, enjoyable life.

The AQHA recommends that horse owners keep abreast of the horse legislation and welfare issues. Owners should recognize that leading equine veterinary, government, and regulatory organizations have experts that create, enact, and enforce humane regulations. Owners should heed the advice of the experts, then base opinions from educated sources (AQHA).

American Horse Council

The American Horse Council was established in Washington, D.C., in 1969 as a national trade association representing the horse industry. It represents horse

interests from owners and breeders to breed associations, horse shows, veterinarians, wholesale/retailers, and other groups interested in horses (American Horse Council).

The American Horse Council has taken a neutral position on the issue of horse slaughter because of the many organizations they support. Some of the horse organizations are for horse slaughter, while others oppose the practice. As a supporter of these organizations, the AHC is neutral, allowing each association to state their own position (American Horse Council).

The American Paint Horse Association

Since 1962, the American Paint Horse Association has registered over 710,000 Paint Horses in 41 nations. They continue to register Paint Horses at a rate of 60,000 per year. "Our association has expressed support for legislation which makes the sale of equine animals for human consumption in the United States illegal but not for European consumption" (p. 1). The APHA supports humane practices in both transportation methods and horse slaughter techniques (APHA).

Many of the members of the APHA make a living though breeding, raising, and training of horses. Placing a ban on their options for disposal could severely impact their operations economically. The APHA believes that it is necessary to preserve overseas markets. This allows horse owners viable economic options when the time comes to dispose of their animals. Trimming

down or closing these markets will affect the value of our horses, which is a precursor for abuse (APHA).

It is a great opportunity and responsibility for the horse associations to innovate, develop, and support programs that will enrich horse enthusiasts and build useful lives for their horses.

> We believe that supporters of horse slaughter for human consumption in Europe and those who oppose it really have a common goal – and that's to appreciate the magnificence of the horse and to see that it always receives humane treatment. No on should dispute that (APHA).

It is a hard truth that owners must eventually decide how to dispose of their horses. Overregulation will likely cause three major undesirable results: (APHA): (1) increase in neglect of unwanted horses, (2) horses being exported to foreign countries with inhumane slaughter practices, and (3) a severe economic impact on equine business.

International League for the Protection of Horses

The ILPH is the largest privately funded horse protection agency in the world (ILPH, 1997). Founded in 1927, the U.K.-based ILPH continues to lobby and propose legislation that will defend horses against abuse.

In opposition to views held by many Americans, many in the U.K. view slaughter as a method of humane euthanasia. The ILPH wishes to see the continuation of the two slaughterhouses still in operation in the United Kingdom and wishes to see more horse abattoirs in future operation. "We would ideally like to see all animals transported on the hook and not the hoof, but until such

times, we are urging the European Commission to ensure that the Live Transport Directive is enforced" (ILPH, 2003).

Legislation by the European Commission resulted in a proposal concerning the transportation of horses. This proposal excluded the issue of slaughter horses. In response, the ILPH has lobbied for improvements through a written declaration calling for reform in animal transport.

The ILPH is working to prevent all exports of live horses for slaughter in Europe. "It is really good news and shows just how seriously Commissioner Byrne is taking the transportation issue. I'm sure that the online debate will serve to highlight the overwhelming public support for stopping the long distance transport of animals for slaughter altogether." (Thomas, 2002)

Horses are subject to long-distance travel, both within E.U. countries and those that are imported. The ILPH desires improvements in horse transport legislation that will decrease travel times, increase rest stops with food and water, and increase ventilation during travel. Optimally, horses intended for slaughter will not be transported to the European continent. "I emphasize that the ILPH are not against people eating horsemeat. It is the treatment of horses up to the point of death that concerns us" (Smales).

CHAPTER 6

DEMAND FOR HORSEMEAT

There are horsemeat markets throughout the world. During a visit to Switzerland, Germany and France, I found the methods in which horsemeat was consumed. Germany and Switzerland enjoy pferdwurst, a sausage made of ground horsemeat and pig lard. Pferd, the German word for horse, is made into many of the same products as beef. The French market musculates the meat, which involves the complete removal of external fat. This delicacy (cheval) is then sold in restaurants and specialty meat shops. French Canadians continue the tradition of consuming horsemeat, making up a small market in Canada.

There is a lot of variation in the quality of horsemeat. In cold-blooded horses, the muscle is hard and lighter in color and of lower quality. The warm-blooded horses have red meat with less fat. Because horses are monogastric, the red meat produced has mostly polysturated fats. It has high concentrations of Galla-lenoleic acid, and because it is a red meat, it is very high in iron. Horsemeat is low in fat and cholesterol. Aside from health aspects, it is a tender meat. It has strong red meat flavors with a tint of sweetness (Potter).

The demand for horsemeat differs from country to country. In Italy, most purchases are of young horses from 8 mo.–18 mo. Italy's principle supply of horses comes from Poland and Romania. They receive horses from throughout

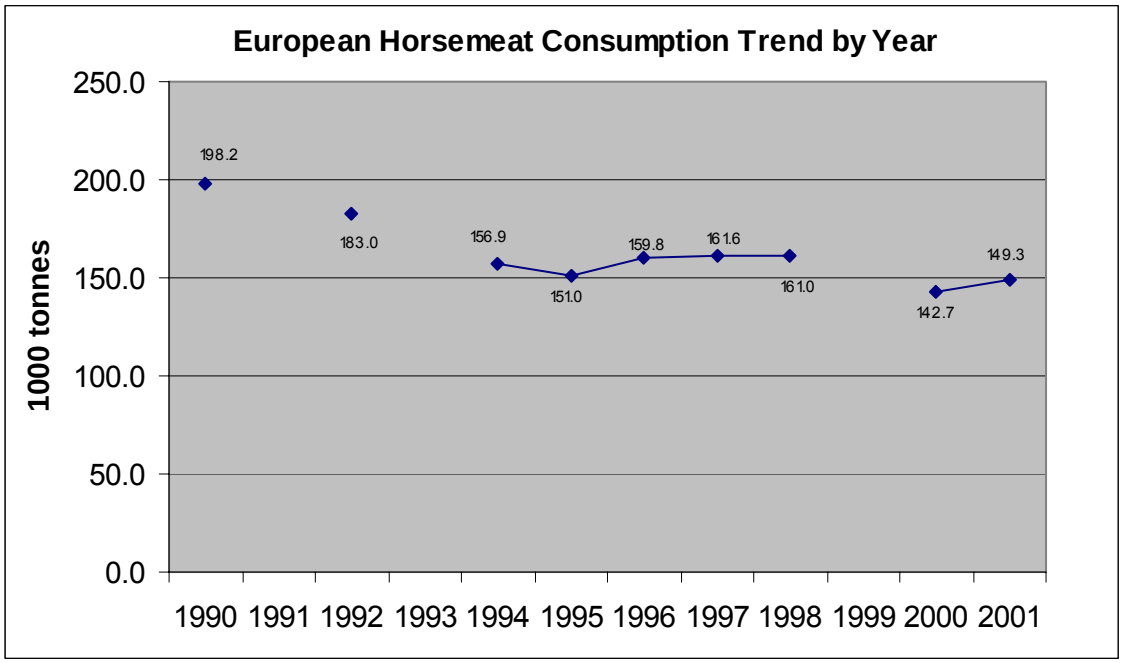
Europe and import from the United States and Canada. Italy consumes the highest total quantity of horsemeat (figure 4).

Switzerland also prefers younger horses from 2-3 years old. They are close to being self-sufficient except during the Christmas holiday when the demand for the high-quality cuts is high. They import mainly from other European countries. France demands high-quality horses which are approximately 12 yrs old (Grunder, Kroupious).

Belgium consumers do not appear to have any preference for a particular breed or age of horsemeat. The market is open for horsemeat from all types of horses. Japan is known for demanding heavy horses. Draft breeds and fat horses, both young and old, are set aside by exporters for the Japanese market. These are the most expensive meat horses, but the meat is cut in thin slices, so the price is spread among many consumers (Kroupious, Potter).

Demand for Horsemeat in Europe

Figure 3 shows the pattern of horsemeat consumption in Europe since 1990. From 1990 to 2001 the consumption of horsemeat has decreased overall by 24.7%. The largest decrease in consumption occurred from the

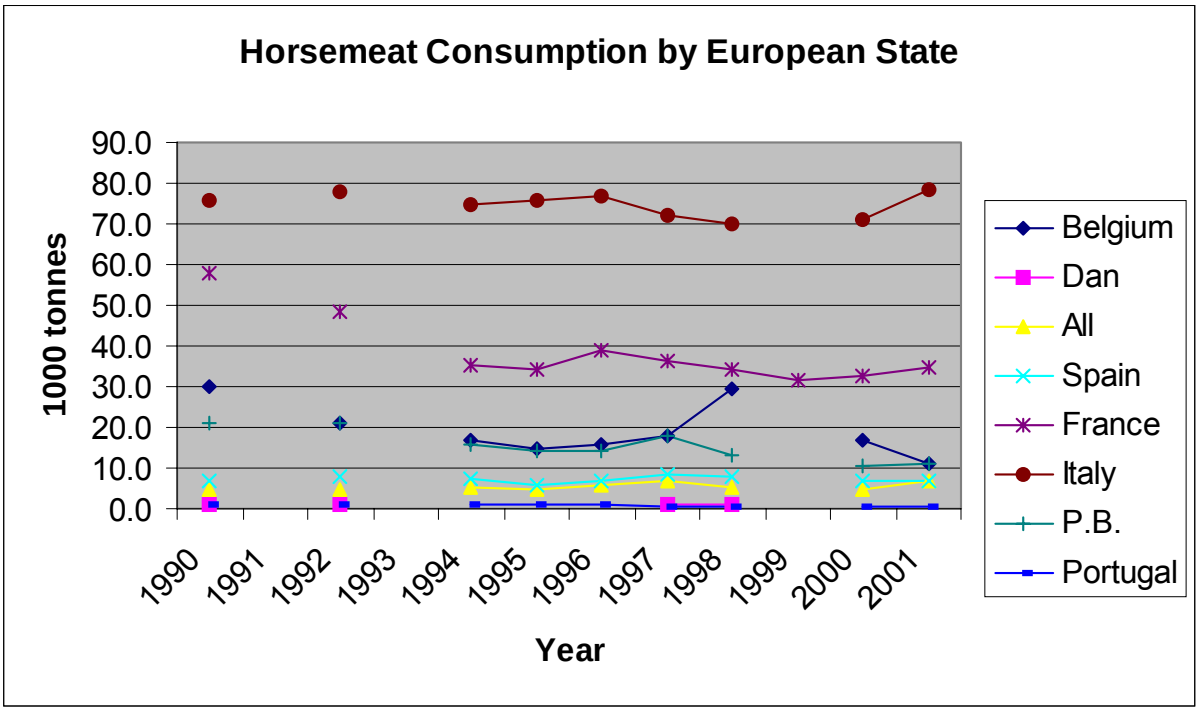


Source: Viandes.

Figure 3. European Horsemeat Consumption from 1990–2001

period of 1992 to 1994. 1995 to 1996 saw an increase in demand by almost 6%, but the increase quickly leveled off in the next couple of years. Figure 4 details the consumption profile by E.U. state.

Domestic European consumption should be described using economic theory of demand. Demand for horsemeat can be determined by income, population, price, price of substitutes and complements, and tastes and preferences:



Source: Viandes.

Figure 4. European Horsemeat Consumption by State

Income

Income is a determinant of whether or not people consume horsemeat. Horsemeat is considered a delicacy in some parts of the world and commands a premium price for the desirable meat cuts in those locations. Horsemeat prices vary substantially by meat portion and cut. High-quality meat cuts are a very expensive meat, which typically makes it only accessible to high-income consumers. Lower quality cuts are sold cheaper than other competing meats, such as beef and pork. Therefore, lower income consumers may choose lower quality horsemeat rather than beef (Grunder).

Price

Different horsemeat cuts have large price spreads. The endercôte, or T-bone, and the tenderloin meat cuts are the most valuable. At 12.40 Euros/kg ($13.93/kg) it is the most expensive meat in France. The 2003 price is 1.1% higher than previous years. However, similar trends in price have also been observed in beef and chicken. The highest in the past decade occurred in 1996 and ranged up to 18 Euros/kg (Viandes).

At the opposite end of the spectrum, cuts of horsemeat other than the endercôte are not as valuable as beef. One of the persons interviewed told of a supplier who tried to sell some of the lowest quality horsemeat to Russia for £.40/kilo ($.24/kilo). The meat was packaged in vacuum-sealed boxes with 98% visible lean meat, which should have been very attractive. Instead he found it difficult to sell (Potter).

An interview with the owner of Bern's Pferdemetzg revealed many customers chose pferd over beef because it is cheaper. For example, a shoulder cut of pferd was ₣5 ($3.62 USD) Swiss francs per kilogram while a similar cut from beef was ₣8 ($5.80 USD) Swiss francs (Grunder).

The market in Italy emphasizes price and uses the lower quality meat for manufactured meat products. The French market emphasizes the quality, restaurant-ready meats. As a result a U.S. ban on slaughter horses would affect various E.U. countries differently. Potter stated, the United States supplies high quality horses with consistency of product. Therefore, a reduction in the availability of high quality meat would more likely have a more adverse effect on the French market than the Italian market.

As stated earlier, figure 3 shows that over the period of 1990–2001, the quantity of horsemeat consumption decreased by 24.7%. The supply of horses from the United States during this same time period decreased by over 80%. One of the reasons for this decrease in the U.S. supply could be a result of industry price competition. During the mid-1990s, Argentina changed legislation to allow the exportation of horsemeat to Europe. Argentina increased exports dramatically at a lower price (Stolen Polo Ponies). The U.S. economic boom of the 1990s increased the value of the U.S. dollar relative to other currencies, making exports more expensive. During this same time, Canada and Argentina increased exports to France while the U.S. exports decreased.

No matter the changes in the economy and political climate, the fact remains that horsemeat is a delicacy, not a commodity. Price does matter. Demand relies on finding the right quality product with a price that consumers are willing to pay. If horsemeat becomes scarce, thus increasing the price, many people will substitute it for other meats.

Population

In both the United States and Europe, the average age of the population is increasing and, consequently, so is the age of the typical horsemeat consumer. The millennial generation is eating differently than their forefathers. Eating horsemeat is a preference of some consumers. That preference is passed on to some of the next generation. However, horsemeat consumption is declining among younger consumers (Potter). Eating horsemeat is acceptable to most Europeans but this paradigm is beginning to change and the younger generation is starting to question this eating habit.

As nutrition and obesity have become issues of greater concern in the general population, people are looking for alternative protein-rich foods. Consumers in the United States and Europe have increased their consumption of white meat, particularly poultry, since 1980, while red meat consumption has stayed fairly constant during this same time frame.

Tastes and Preferences

Because horsemeat is not a common food, personal tastes and preferences play a large role in the demand for horsemeat. The European demand for

horsemeat exists because of cultural preferences that have survived through the ages and continue today. During an interview with the author, Sonya Grunder of Bern's Pferdemetzg explains,

> The locals don't say anything [about eating horsemeat]. It is perfectly normal here. We have been here for over 100 years. Sometimes we have tourists from the U.S. and other parts of the world enter the shop. When they find out that the meat displayed is horsemeat they are caught off guard and a little surprised. At first I don't want to tell them, but many times because they are abroad and willing to try new things, they will try some.

Horsemeat consumers also report a preference for the taste of the meat as compared to alternative products, such as beef, pork, or chicken. It has a sweet taste, with a strong red-meat flavor. The most tender and preferred cuts of horsemeat include the endercôte (T-bone) and the cuts between the ribs. The tenderloin is also in high demand. Restaurants offering horsemeat usually offer these two cuts of meat. These delicacy cuts are more tender than beef, with a stronger flavor and sell easily, while the rest of the horsemeat cuts do not. This explains why 60% of horsemeat consumed in Switzerland has to be imported. If Swiss consumers choose to eat all of the horsemeat cuts, Switzerland would be self-sufficient in terms of domestic production equaling total consumption (Grunder).

Another factor potentially influencing the demand for horsemeat in Europe is the BSE crisis. The BSE crisis in 1996 led Europeans to look for alternative meat sources besides beef. BSE affects the brain of cattle. The disease, which causes physical deterioration of the brain, dementia, and death, is strongly suspected to be zoonotic, meaning that it can be passed on to

humans. The suspected method of transfer is through consumption of neurological system tissue from infected animals. Creutzfeldt Jakobs Disease (CJD) is named after the scientist who found it the naturally occuring human form of this disease. New variant CJD is the disease caused by infection with BSE (U.S. Federal Drug Administration).

Horsemeat does carry one significant health risk. Trichinellosis, a parasitic infection of muscle tissue, has been recognized in horses sporadically for the past century. In 1985, a major outbreak in France infected over 1,000 people, resulting in five fatalities. The outbreak resulted in a 25% drop in horsemeat consumption initially until research showed that testing can identify trichina. The 1990s saw close to 1,500 cases of trichinellosis. The majority of those cases occurred in France in 1998 (Ancelle). Because of these outbreaks, horsemeat must now be tested for trichinellosis infestation, and carcasses testing positive are not used for human food.

Another taste and preference factor potentially affecting demand for horsemeat involves people seeking ways to eat more healthily. People throughout the world are constantly looking for better nutrition, and horsemeat is a very healthy product. Doctors in Europe send their anemic patients to the specialty meat market to buy horsemeat because of its high iron content (Anonymous; Grunder). Some European doctors prescribe a horsemeat diet to pregnant women because of these same health benefits. Veterinarians prescribe horsemeat for dogs that are suffering with scabies and other dermatologic conditions (Grunder).

Distribution

The process of selling horsemeat has undergone many changes in the past decade. In the 1980s, European meat shops had a variety of meat to sell, including horsemeat. Most horsemeat in Europe is now sold exclusively by horsemeat butchers. In Italy, a law forbids the sale of equine meat in the same place where other species of meats are sold. An interview I conducted in Belgium revealed just the opposite. Before 1990, regulations required specialization in the horsemeat market. In the early 1990s changes were made so that any butcher could sell any variety of meat including horsemeat. Although this regulation was relaxed, specialization in the horsemeat industry is still commonplace in Belgium. One butcher interviewed did not specialize in horsemeat but sold a small amount through the early part of 2003.

> Six months ago we quit selling horsemeat because it wasn't selling. It would get old and we ended up throwing it away and taking a loss. Our customers would look at the color and quality of the meat. They didn't particularly differentiate between horsemeat and beef, but with a constant turnover of beef the horsemeat was older. The customer would look at the meat selection and would buy what looked better. Horsemeat color changes quicker than beef which makes it harder to sell (Anonymous A).

Possible Effects on the Industry and Policy Implications

The groups involved in drafting the H.R. 857 bill contend that eating horsemeat is a disgrace and they want to stop horsemeat consumption entirely. The proposed U.S. ban on slaughter horses may have that impact on the U.S. horse industry. The H.O.R.S.E.S organization in Texas explains:

> Horsemeat is a delicacy. The fewer horses slaughtered, the more sought after the delicacy will become. When it comes to food, the average consumer, even with a delicacy will only continue to buy up to a certain price. Demand for horsemeat is already on the wane, both due to price, and due to the fact that apparently the younger generations in horsemeat-eating countries are not looking at the horse as a food animal, but more as a companion animal (H.O.R.S.E.S).

The proposed ban will stop the slaughtering of horses in the United States and the shipping of horses to Canada and Mexico for slaughter. However, this proposal may do more than that. The interviews conducted for this thesis brought out some other points to consider.

The European market is dependent on high-quality horses. European horsemeat consumers want a consistent high quality product. They do not want a steak that is 6 inches across and another that is a foot across. The prime market wants a carcass that is 280–320 kilos, all red meat, all with very little fat, and as fresh as possible. The United States (in conjunction with Canadian processing plants) provides a high volume of horses resulting in a consistent product (Potter). The horse can be slaughtered on Friday, quartered on Saturday morning, shipped on Sunday, and it is ready for Monday morning's market. No other country in the world has that kind of functional process. Since the consumer has come to expect that quality and freshness, if it is not available, they will become dissatisfied and switch to a different product.

Restaurants are more likely feel the impact of a slaughter horse ban than other butchers selling a variety of horsemeat cuts. As mentioned earlier, restaurants only purchase the high-quality meat cuts. Restaurant's T-bone and

tenderloin demands are met through imports. If the restaurant cannot guarantee the quantity of product on hand for customer satisfaction, then it will be removed from the menu.

Europe has some of the strictest food regulations and restrictions in the world. The prevention of more cases of BSE, Foot and Mouth, and other food-borne illnesses, is paramount. Europe does not allow genetically modified organisms (GMO) in human food products, nor do they allow many of the pharmaceuticals and growth hormones that are widely used throughout other parts of the world. The United States has adapted to the regulations that have come with exporting. Other countries wishing to export products into the European Union struggle with the regulations. New entrants would have an uphill battle in meeting E.U. food regulations on shipping horsemeat.

If a U.S. slaughter horse ban were in place, Argentina, Australia, and East European countries would have to increase horsemeat exports by 65,000-95,000 horses per year. Horse population, inconsistent quality of meat demanded, and European food regulations make that unrealistic. First, very few countries farm horses specifically for meat, therefore it is difficult to increase slaughter horse herd size to match the demand. The slaughter horse population originates from crippled, sick, and old horses. Horse owners will only sell horses for slaughter resulting from a lack of other uses for the horse.

Second, retailers want a consistent carcass size, and consumer's desire consistent quality in the food they buy. The United States has a variety of heavy draft horses, light horses, and ponies. Argentina horses are not as large

as American horses. Australia does not have the amount of draft horses as in the United States.

The U.S. supply of horses sold for meat has been shrinking since 1990 (appendix 2). Even so, European horsemeat demand is reliant on U.S. exports. Horses supplied by the United States provide quality meat that maintains the restaurant market.

Supply of Slaughter Horses

Countries who supply horsemeat include North America and South America, European countries, and Australia. Although the supply of horsemeat from the United States has declined in the past decade, the United States is still an important supplier in world markets. The economic value of slaughter horses totaled $26.5 million USD (FATUS). Over the past 15 years, the horsemeat industry had a high value of $155 million (1990) and an overall yearly average of exports of $71.5 million USD (FATUS).

Average U.S. prices have ranged from $.20/lb. to $.70/lb. during the past 15 years with an average price in 2002 of $.35/lb. Prices depend on the breed, size, and condition of the horse (Kroupious; Palmer).

Economic Impact on Horse Prices

The prohibition of slaughtering horses will almost certainly have an impact on the value of horses. Presently, horses have a terminal value that they would not have following a nationwide ban on slaughter horses. An expendable

horse in 2002 was worth an estimated $.35 per lb. (Appendix 1). Consequently, a horse weighing 1,000 lbs could be sold to a slaughtering facility and receive payment of about $350 USD. The adoption of the H.R. 857 would prohibit the sale of the horse for slaughter and the cull horse would therefore no longer be worth $350. It is assumed that a net change in horse value would be similar to the value change witnessed in the California case study. Horses now worth about $.35 per pound will decrease in a value of less than $.10 per pound. Furthermore, if it becomes necessary for the owner to euthanize and dispose of the horse, the horse will return a negative terminal value. This is a result of the owner's cost of euthanizing and disposing of the horse (see table 1). The owner can no longer sell the horse for a positive return, but rather incurs the cost of disposing of the horse. This results in a horse with a negative terminal value rather than a positive one. Applying a discounted cash flow (DCF) method aids in calculating and illustrating the impact of a slaughter horse ban on horse prices. The following formula depicts the change in prices after the ban.

$$\frac{\Pr eban\_Value - Postban\_Value}{(1+i)^n}$$ = Net difference in post ban horse value

The pre-ban value is the value that cull horses are currently sold for. This value is on average $.35 per lb. and lies in a range between $.20 to $.70 cents per lb. (Appendix 1). The post-ban value is the price buyers are willing to pay for a horse after slaughtering horses is prohibited. Again, this value will probably be significantly lower than the current value, and may be negative because of the

costs associated with euthanasia and disposing of the unwanted horse. i represents the interest rate and n is the mortality rate (lifespan) of the horse.

By using the formula mentioned, the decrease in a horse's net present value after a slaughter horse ban can be estimated.

$$\frac{\$350 - \$ - 170}{(1+5\%)^{10.5}} = \frac{520}{(1.05)^{11}} \quad = \$304$$

In this example a one thousand pound horse was sold for slaughter at a price of $.35 per lb. giving the horse a $350 USD pre-ban value.

1,000 lbs * .35/lb = $350.

It is assumed that following a slaughter horse ban the owner cannot sell the horse for a positive value and will have to pay to dispose of the horse. Euthanasia costs $80, plus $90 for hauling and rendering (table 1). Total cost comes to $170, giving the horse a $-170 post-ban value. The interest rate is set at an arbitrary 5%, i = 5%. According to the Veterinary Economic Journal, the average lifespan of a horse in the United States is 10.5 years (Thomson Veterinary Healthcare Communications). After rounding up, this horse lives for eleven years, or n =11. Following a slaughter horse ban, cull horses will be worth, on average, $304 dollars less than before an enacted ban. This means that a thousand pound, eleven-year-old horse purchased for $2500 would actually be worth $2196 at birth. The net present value of the horse is lessened by $304 following a slaughter horse ban. This figure is the same whether the horse is invested for racing or if it is a backyard companion. The reason for this

is that cull horse prices are based on the weight of the horse and not the horse utilization.

This example uses the best known averages for pre-value, post-value and horse lifespan. This is done in effort to make the closest estimate possible on the change in net present value of cull horses after a slaughter horse ban is enacted. The largest limitation on these calculations is the availability of exact figures. The pre-ban figure is based on the average price per lb of 1301 horses shipped to slaughter in 2002. These horses were collected from the western states, excluding California. These horses were primarily processed in western North America. The post ban value including the price of euthanasia and rendering is based on table 1 of this document. Other methods of disposal could have been used. The amount of $-170 was considered by the author to be a very modest average which will an estimate of the horse value impact. This amount could be much more if the cull horse is incinerated and may be less if the horse is buried on ones own property.

Horses average lifespan of 10.5 years is the most up-to-date estimate given by Veterinary Economics Journal (Thomson Veterinary Communications). There are a few articles that estimates the lifespan of a horse. This figure was the most up-to-date and scientifically backed number available. This number is based on survey methodology and does not represent an actual inventory of annual horse deaths in the United States.

The loss in horse value can also be observed through a discounted cash flow, DCF, spreadsheet. Consider the next example of a horse that is

purchased for family recreational enjoyment. The initial investment is $2,500. The horse is not bound by tax, nor does it bring a return. Other figures are held constant for the comparison study (table 3).

Table 3. DCF: $2,500 Recreation Horse; Later Sold for Slaughter for $350

Initial	2,500[a]			
Terminal	350[b]			1
Growth		Returns per year		0[c]
Receipts	0.00%	Costs per year		2340[d]
Expenses	0.00%	Payment		$0.00
Tax rate	0.00%[e]			
% financed	0.00%			
Finance rate	0.00%	Net present value		-21,732
Discount rate	5.00%[f]	Irr		#NUM!
Yrs financed	10.5			

Year:	0	1	2	3	4	5	6	7	8	9	10	11
Receipts		0	0	0	0	0	0	0	0	0	0	0
Terminal value											0	350
Cash inflow		0	0	0	0	0	0	0	0	0	0	350
Down	2500											
Operating expenses		2340	2340	2340	2340	2340	2340	2340	2340	2340	2340	2340
Depreciation			0	0	0	0	0	0	0			
Interest		0	0	0	0	0	0	0	0	0	0	0
Principal		0	0	0	0	0	0	0	0	0	0	0
Taxable income		-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-1990
Income taxes		0	0	0	0	0	0	0	0	0	0	0
Cash outflow		2340	2340	2340	2340	2340	2340	2340	2340	2340	2340	2340
Net cash flow	-2500	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-1990

[a]Recreation horse purchase for $2500.
[b]1,000 lb. horse * $.35 = $350.
[c]Recreation horse netting zero (0) return.
[d]Average horse maintenance cost per year. (Any arbitrary number can be used as long as it is held constant.)
[e]0% tax rate paid for the horse.
[f]Arbitrary constant discount rate.

A horse purchased for $2,500 and kept during the average lifespan of 11 years has a net present value of $-21,732.

The next example (table 4) illustrates the horse's net present value after a slaughter horse ban. The terminal value becomes negative as a result of the need to euthanize and dispose of the horse. Without the option of slaughter the horse will need to be disposed of through one of the other disposition methods. The animal must still be euthanized and disposed of, resulting in a negative terminal value. Using the same 1000 lb horse, the change in NPV can be observed. Euthanasia costs $80, plus $90 for hauling and rendering. Total cost comes to $170, giving the horse a $-170 terminal value.

Table 4. DCF: Recreation Horse, Same as Table 3, Not Sold for Slaughter

Initial	2,500[a]		
Terminal	-170[b]		1
Growth		Returns per year	0[c]
Receipts	0.00%	Costs per year	2340[d]
Expenses	0.00%	Payment	$0.00
Tax rate	0.00%[e]		
% financed	0.00%		
Finance rate	0.00%	Net present value	-22,036
Discount rate	5.00%[f]	Irr	#NUM!
Yrs financed	10.5		

Year:	0	1	2	3	4	5	6	7	8	9	10	11
Receipts		0	0	0	0	0	0	0	0	0	0	0
Terminal value											0	-170
Cash inflow		0	0	0	0	0	0	0	0	0	0	-170
Down	2500											
Operating expenses		2340	2340	2340	2340	2340	2340	2340	2340	2340	2340	2340
Depreciation			0	0	0	0	0	0	0			
Interest		0	0	0	0	0	0	0	0	0	0	0
Principal		0	0	0	0	0	0	0	0	0	0	0
Taxable income		-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2510
Income taxes		0	0	0	0	0	0	0	0	0	0	0
Cash outflow		2340	2340	2340	2340	2340	2340	2340	2340	2340	2340	2340
Net cash flow	-2500	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2340	-2510

[a]Recreation horse purchase for $2500.
[b]Cost of euthanasia, hauling, and rendering; $80 + $90 = $170. This value is negative as it is an expense to the producer.
[c]Recreation horse netting zero (0) return.
[d]Average horse maintenance cost per year. (Any arbitrary number can be used as long as it is held constant.)
[e]0% tax rate paid for the horse.
[f]Arbitrary constant discount rate.

Following a slaughter horse ban, the NPV of these same horses decreased from $-21,732 to $-22,036. The change in NPV, similar to the change seen in the earlier example is $304:

$-21,732 — -22,036 = $304.

In these examples, the figures for the rate of return, cost per year, tax rate, and the discount rate are randomly chosen. These figures have no bearing or consequence on the model as long as they are kept constant when comparing each DCF worksheet. Granted that these numbers are accurate, upon the induction of a slaughter horse ban, with other factors held constant, a newborn foal's value is decreased by $304.

Discussion

In 2002, the Barents Group conducted a survey in effort to inventory the number of horses in the United States. The inventory number published and used by many United States horse associations is 6.9 million (American Horse Council). An annual death rate can be calculated by taking 6.9 million horses and dividing it into the average lifespan of a horse.

6,900,000/10.5yrs = 657,142 horse deaths per year

This amount is assumed to be an accurate number. An actual mortality rate of horses is not available. It is estimated that one percent of the horse population dies each year (Equine Advocates; AQHA). One percent multiplied by the 6.9 million horse population would equal a mortality rate of 690,000 horses

annually. This study uses a mortality rate of 657,142 as it will be a more moderate figure of these estimates.

Approximately 65,000 – 95,000 (AQHA, Cordes) of the 657,142/year[1] horse mortality rate are disposed of by slaughter. They are either processed through the two remaining slaughtering facilities in the United States or hauled to Canada and Mexico. By taking the total amount of horses slaughtered per year and multiply that amount by the loss in NPV, the impact on the producer can be calculated:

65,000-95,000 horses * $304.00 = $19,760,000 to $28,880,000

A slaughter horse ban could result in a nationwide producer loss of an average amount of $24,320,000 in horse value.

This $24,320,000 production loss must be viewed in perspective. Most horse owners do not consider the cost of disposal, or terminal value, when negotiating the price of a horse. For example, when a person negotiates the price of the horse, they do not take into account the net present value and reduce the asking price by $304. Horses valued considerably below an average horse price will absorb this producer loss. People will not buy a $300 horse when they may immediately be required to pay $200 to dispose of it. Horse owners who are currently purchasing horses for a few hundred dollars will buy horses that are far above the disposal amount to offset the risk of the lower NPV.

[1]Horse population 6,900,000/10.5 yrs = 657,142 horse mortality rate.

The impact will probably be exhibited the most in low-valued horses. This phenomenon was prevalent in the California case study interviews. The value of good horses remained constant. A person purchasing a $10,000 race horse does not consider how much it will cost to dispose of the horse. Higher valued horses spread the $304 NPV over a much greater amount. This part of the industry will likely feel no impact.

A higher percentage of the $24 million impact will occur in the horses under $1,000. People will be hesitant to buy horses for a few hundred dollars for fear of taking a loss by incurring disposal costs. Many of these horses will become valueless. If it is known that a horse is sick, dangerous, or just plain old, people will be averse to purchasing the animal. This is where the $24 million producer loss becomes a reality.

Regression Analysis

The objective of this Thesis is to determine if a U.S. ban on horsemeat exports will have a significant economic impact on the horse industry. This part of the analysis examines the determinants of the United States' supply of horses and Europe's demand for horsemeat. Besides calculating the costs of disposing of horses through means other than slaughter for human consumption, regression analysis is used to identify the determinants of U.S. horsemeat supply and European demand fluctuations. A simultaneous econometric model was developed and estimated to do this since supply of horsemeat exports and

European demand are jointly determined. The structural model should include variables determined by economic theory and is specified as

(1) Supply $Q_t = \alpha_0 + \alpha_1 \underset{t}{P} + \alpha_2 C_t + \alpha_3 TREND_t + \alpha_4 TREND_t^{\,2} + \varepsilon_t$

(2) Demand $P_t = \beta_0 + \beta_1 \underset{t}{Q} + \beta_2 BSE_t + \beta_3 Q_{B_t} + \beta_4 INCOME_t + \beta_5 IMPORTS_{t-1} + \xi_t$

(3) Supply=Demand

where P_t is the value of U.S. exports measured in Euros at time t. Q_t is the annual amount of horsemeat exported from the U.S. The variable Q_{B_t} is per capita beef consumption in France at time t. BSE_t is used as a binary variable testing if the BSE crisis in Europe affected U.S. horsemeat exports. $INCOME_t$ is household income in France at time t. $IMPORTS_{t-1}$ is horsemeat imports in Europe from countries other than the U.S. in the previous time period. Q_t and P_t applied to the supply equation are the same variables used in the demand equation. C_t in the supply equation is input costs, in this case, U.S. cull horse price at time t. TREND and TREND^2 are used as proxies for the increasingly negative political environment that has existed in the U.S. since 1990 relative to slaughtering horses for human consumption.

The observations for the variables described here and used in the structural model were taken from a variety of sources. When necessary, values were converted into like terms to maintain the consistency of the model.

The value and quantity of U.S. horsemeat exports is gathered and

reported by the U.S. Foreign Agricultural Trade (FATUS). The FATUS value is recorded in U.S. dollars per metric ton (MT). The price of horsemeat exports (P_t) used in the regression analysis was calculated by dividing the total value of U.S. horsemeat exports by the total quantity measured in metric tonnes of horsemeat exported. This price was converted to Euro's using the Pacific commerce exchange rate table (Pacific). The price then was converted into real terms using the U.S. consumer pricing index to remove the effects of inflation during the study period. The result was an exchange-rate adjusted, real price for U.S. horsemeat exports. The data are a time-series beginning in 1990 and ending in 2002.

As discussed earlier, the U.S. ships much of the highest quality horsemeat cuts that France imports (Potter). For this reason, France was chosen as a proxy to represent European demand for U.S. horsemeat in the regression analysis. The annual quantity of beef produced (Q_{B_t}) in France was used to test the effect of a potential compliment or a substitute for horsemeat in France. Annual beef production in France was found through the Food and Agriculture Organization of the United Nations (FAOSTAT) database.

The income measure (I_t) is the annual per capita income in France (Insee). The Pacific Commerce exchange rate tables were used to convert the French income figures into U.S. dollars. The import variable ($I_{M_{t-1}}$) examines how increases in European imports of horsemeat during the past decade from non-U.S. countries have affected U.S. horsemeat prices. Italy imports much of

its horsemeat from eastern European countries (ISMEA). Because of this, Italy was used as a proxy for Europe's non-U.S. sources for horsemeat. Data from ISMEA and ISTAT give the volume of horsemeat exports and imports moving to and from Italy and are given in kilograms from 1990–2001. Because the 2002 value was unavailable, it was interpolated using a semi-log growth model (Gujarati).

A binary variable was used to test the affect of BSE on the demand for horsemeat in Europe. Many articles state that Europe's BSE crisis changed people's meat-eating preference from beef to horsemeat (Helm, Heyde). This dummy variable (BSE) was used to test whether BSE changed European preferences to consuming horsemeat. The value for the variable, BSE, was 1 for 1996-1999 inclusive, the height of Europe's BSE crisis, and 0 otherwise. This dummy variable tested whether BSE (Mad Cow Disease) shifted the demand curve for horsemeat during the last half of the 1990's.

The same prices and quantities of U.S. horsemeat exports used in the demand equation were also used in the supply equation. The price of cull horses was used to represent input costs since it is the principle input cost in horse processing and because a time series for processing costs was not available. The data for culled horse prices originated from the records of a horse dealer in Idaho (Appendix 1). The cull horse prices are based on the amount processing facilities paid owners for horses during the study period. The cull horse prices used are indicative of prices paid in the western United States. Eastern North America cull horse prices may be different, but it is

assumed that the cull horse market is competitive and that the law of one price held in this instance.

The cull horses used to generate the price series were purchased in Idaho, Wyoming, Utah, Nevada, California, Montana, and Oregon. The dealer's records listed each of the horses that he shipped to a slaughtering facility during the study period. Next to the description of each horse, its weight was recorded, followed by the price paid for the horse. The dataset represented over 15,000 cull horses sold between 1990 and 2002. Appendix 1lists three loads of horses each month. Only three loads each month are recorded because of time restraints and availability of the records. The left-hand column lists how many horses were on each truck. The next column provides the total weight of the horses. The average price paid for the horses is listed in the next column. The right hand column simply provides the price per pound arrived at by dividing the price of the load of horses by its weight. The cull horse price was averaged for each year from 1990 through 2002. Because the cull horse records were recorded in pounds (lbs.) it was necessary to convert them to metric form to maintain the consistency in the unit of measure in the model. Consequently, the price of cull horses was converted to dollars per kilogram and then converted into real terms using the same U.S. CPI used for the other variables. Tables 5 & 6 present the regression data used in the analysis.

Table 5. U.S. Horsemeat Demand Equation, 1990–2002

YEAR	Price per metric ton in real Euros	Export Quantity (MT)	BSE	PC Quantity of beef produced in France in KG	French Income $/(USD) per habitant	Horsemeat imports- Non U.S Countries
1990	2913.81	46066	0	33.60	22204	186.0
1991	2854.11	36973	0	35.41	22097	171.1
1992	2732.69	33347	0	32.62	21990	162.9
1993	2463.99	26620	0	29.48	21883	155.8
1994	2643.80	14944	0	28.27	22868	166.6
1995	2898.42	15081	0	29.37	25718	170.4
1996	2879.49	14071	1	30.44	25463	200.5
1997	2287.96	9740	0	29.40	23637	203.3
1998	2149.31	9083	0	27.79	24399	186.0
1999	1982.47	7814	0	27.29	23939	178.2
2000	1907.82	6785	0	25.79	21576	187.2
2001	2024.17	7257	0	26.52	21680	231.4
2002	1753.36	4592	0	27.78	23394	234.2

Table 6. U.S. Horsemeat Supply Equation, 1990–2000

YEAR	Export Quantity (MT)	Price per metric ton in real Euros	Price of Culled Horses $/KG
1990	46066	2913.81	0.732
1991	36973	2854.11	0.967
1992	33347	2732.69	0.887
1993	26620	2463.99	0.899
1994	14944	2643.80	0.802
1995	15081	2898.42	0.818
1996	14071	2879.49	0.797
1997	9740	2287.96	0.787
1998	9083	2149.31	0.611
1999	7814	1982.47	0.656
2000	6785	1907.82	0.586
2001	7257	2024.17	0.521
2002	4592	1753.36	0.429

Because the supply and demand for U. S. horsemeat is jointly determined, a simultaneous model of supply and demand is used to estimate the parameters of the supply and demand system specified by equations (1-3). The demand equation is just identified but the supply equation is over identified indicating that a two-stage least square (2SLS) is the appropriate method for estimating the parameters of the system (Ferris).

The 2SLS procedure is accomplished in two steps. First each of the endogenous variables in the system, in this case P_t and Q_t , are separately regressed on all of the exogenous variables in the system, in this case *BSE*, Q_B, *INCOME*, *IMPORTS*, *C*, *TREND*, and $TREND^2$, to obtain ordinary least squares (OLS) estimates for P_t and Q_t that are not contemporaneously correlated, or $\hat{P}_t$ and $\hat{Q}_t$. The equations used to accomplish the first step of the procedure are also called the reduced-form equations and are specified as follows:

(4)
$$\hat{Q}_t = \theta_0 + \theta_1 BSE_t + \theta_2 Q_{B_t} + \theta_3 INCOME_t + \theta_4 IMPORTS_{t-1} + \theta_5 C_t + \theta_6 TREND_t + \theta_7 TREND_t^2$$

(5)
$$\hat{P}_t = \phi_0 + \phi_1 BSE_t + \phi_2 Q_{B_t} + \phi_3 INCOME_t + \phi_4 IMPORTS_{t-1} + \phi_5 C_t + \phi_6 TREND_t + \phi_7 TREND_t^2$$

The second step in 2SLS is to estimate the parameters of the original model but substituting the predicted values for *P* and *Q* on the right-hand side of their respective equations (predicted values from equations (4) and (5).

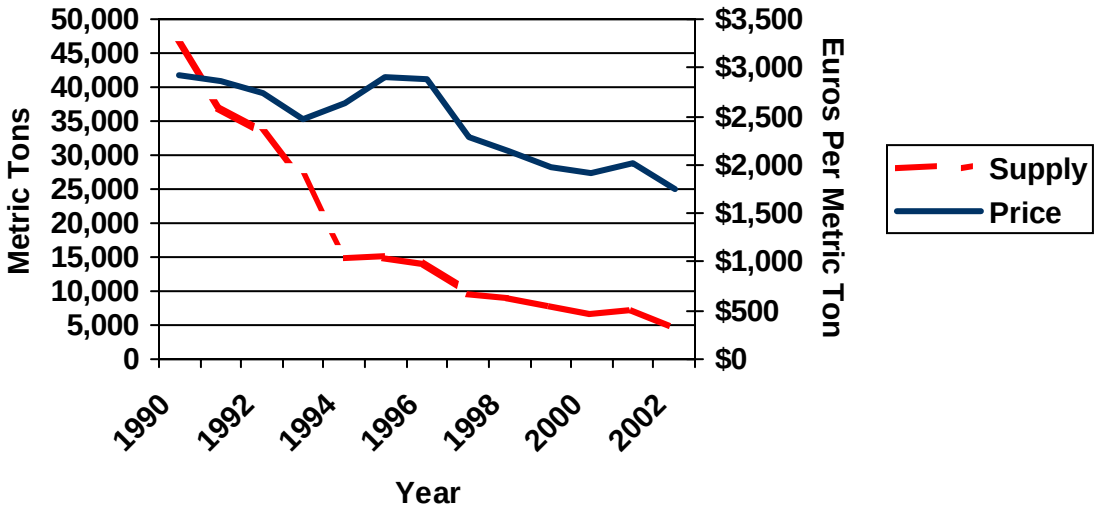
Consequently, the 2SLS parameter estimates are obtained by using OLS to estimate the parameters of the following equations:

(6) $$Q_t = \delta_0 + \delta_1 \hat{P}_t + \delta_2 C_t + \delta_3 TREND_t + \delta_4 TREND_t^2 + \phi_t$$

(7) $$P_t = \gamma_0 + \gamma_1 \hat{Q}_t + \gamma_2 BSE_t + \gamma_3 Q_{B_t} + \gamma_4 INCOME_t + \gamma_5 IMPORTS_{t-1} + \psi_t$$

The parameter estimates for equations (6) and (7) are presented in Tables 5 & 6 and represent unbiased estimates for the parameters indicated in equations (1) and (2), i.e., $\delta_i = \alpha_i$ and $\gamma_i = \beta_i$ for all i. The results for the equation explaining the supply of horsemeat exported from the U. S. indicate a continual downward (*TREND*) but slowing (*TREND*^{2}) shift of the supply curve to the left that cannot be explained by the exchange rate-adjusted, real export price (*P*) and the cost of cull horses (*C*). If one considers *TREND* and *TREND*^{2} as a proxies for public attitudes and policies in the U. S. and elsewhere that have affected the desirability and/or costs of slaughtering horses for human consumption, then clearly public opinion and policy are affecting the number of horses that are slaughtered for this purpose. Figure 5 provides some circumstantial evidence for this since U. S. horsemeat exports declined dramatically during the study period even though input costs (cull horses or *C*) also declined in real terms during the same time.

Figure 5. U.S. Exports and Export Prices for Horsemeat, 1990–2000



The results for the demand equation (Table 7) provide some additional insights regarding factors affecting the market for U. S. horsemeat. *TREND* and $TREND^2$ were also first tested in the demand model and were both found to have parameters that were not statistically different than zero in the second stage of the 2SLS procedure. Consequently, the model was reestimated after dropping these two variables from the demand equation. The results for demand suggest that the demand for U. S. horsemeat exports has suffered because of a shift away from red meat in Europe. For example, the BSE crisis in the last half of the 1990s had a small negative effect on horsemeat suggesting that European consumers were exhibiting some reluctance to eat red meat in general and not just beef. This is illustrated perhaps more dramatically by the significant positive sign for Q_B, a result that suggests that horsemeat and beef are complements of one another. An examination of the data reveals that per capita beef consumption[2] in France fell by over 17% during the study period (from 33.6 Kg in 1990 to 27.8 Kg in 2002) at the same time U. S. horsemeat exports fell by over 90% (from 46,066 MT in 1990 to 4,592 MT in 2002). These results suggest a general shift away from red meat during the study period which would explain the positive sign for beef consumption.

INCOME has a positive and statistically significant coefficient indicating that U.S. horsemeat exports are a normal good i.e., demand increases with

[2] Beef production per capita in France is actually used in the analysis. Assuming that most beef produced in France is consumed domestically, this should make domestic production a reasonable estimate for domestic French consumption.

positive changes in French income. This is consistent with information from interviews conducted in France and Germany which suggested that income and consumption of horsemeat in Europe are positively related (Grunder). Finally, competing European *IMPORTS* were found to be significant substitutes for U. S. horsemeat, as expected, because *IMPORTS* had a negative and statistically significant coefficient.

Table 8 presents the supply elasticities and demand flexibilities calculated at their means for significant system coefficients. While the trend elasticities for the trend variables need to be interpreted with caution, they indicate just how dramatically the supply of U. S. horsemeat exports has declined in the past 10-15 years. The relatively large flexibility for beef (Q_B) suggests that beef and horsemeat exports are relatively close compliments, i.e., that as the consumption of beef has declined in France it has had a close corresponding negative impact on U. S. horsemeat exports. The flexibility for *INCOME* indicates a large impact as a result of income changes. The flexibility of 1.07 would suggest an income elasticity close to one. This is a very large income effect for a food product and suggests that horsemeat comes close to being a luxury item. Finally, the flexibility for *IMPORTS* suggests a relatively large impact on U. S. horsemeat export prices as competing imports increase. For example, a 10% increase in competing imports would be estimated to have almost an 8% negative impact on U. S. horsemeat export prices (10% * -0.795).

The results for the demand equation suggest that a movement away from red meat, especially beef, and an increase in competing imports, probably

low-priced imports from central and Eastern Europe, have combined to reduce the demand for U. S. horsemeat since 1990. The results for the system of supply and demand indicate that the public concern and policy changes, such as the ban on slaughter in California, the difficulty in opening or expanding slaughter facilities in the U. S., together with rising competition and changes in consumer preferences for red meat have combined to reduce both the quantity and price of U. S. horsemeat exports. Continuing pressure from U. S. policy makers and the opening of freer trade within Europe and between Europe and South America all suggest a difficult future exists for the horse slaughter industry for human consumption.

Policy makers and horse owners should begin to seriously consider alternatives for disposal that are cost effective and humane given that the market of U. S. horsemeat exports appears to be in a continually declining mode. Policy should account for additional costs that will be borne by horse owners should the slaughter market be legislated or naturally pass out of existence.

Table 7. 2SLS Parameter Estimates for the Supply and Demand for U.S. Horsemeat to Europe (Equations (5) and (6)).

Variable	Parameter Estimate (Standard Error)
Supply Equation:	
Intercept	44569.488 (22204.995)*
$\hat{P}$	-1.341 (1.360)
C	12829.715 (20709.193)
TREND	-8426.138 (1220.410)***
$TREND^2$	413.3889 (81.978)***
Demand Equation:	
Intercept	-1966.230 (902.864)**
$\hat{Q}$	-0.010 (0.008)
BSE	-173.851 (89.403)*
Q_B	134.178 (30.260)***
INCOME	0.110 (0.026)***
IMPORTS	-10.327 (1.465)****

* Denotes statistically different than zero at the 10% level of confidence.
** Denotes statistically different than zero at the 5% level of confidence.
*** Denotes statistically different than zero at the 1% level of confidence.

Table 8. Estimated Supply Elasticities and Demand Flexibilities for Significant Estimated Coefficients Reported in Table 7 Calculated at Their Means.

Variable	Elasticity	Flexibility
TREND	-4.07	
$TREND^2$	1.815	
Q_B		1.644
INCOME		1.070
IMPORTS		-0.795

Research Limitations

One complication with the study of slaughter horses is the availability of data. Agricultural food commodities research has been conducted for decades. The data are available for how many cattle, sheep, and poultry are raised and the amount of production these commodities generate. Unlike slaughter horses, commodity livestock inventories and mortality rates have been available since the late 1800s. Only more expensive racing, show, and stable horses have such detailed records. Most horses are born, live, and die without record.

In 1987, the USDA conducted a horse inventory survey. In 1992, another survey was conducted in an effort to inventory the number of horses in the United States. Both of these censuses counted only the horses that were raised on farms. This did not include single, privately-owned horses, and did not include all ranches throughout the United States. Only the more recent 1998-1999 census and a study done in 2002 by the Barents group estimated, through sampling, the total number of horses in the United States.

Because of the limited information on horse inventory, it is difficult to determine the actual turnover rate of horse population in the United States. It is presumed that from 1998–2002 horse inventories increased by 1.3% per year. (Force of the Horse). This still does not document the numbers of horses according to the method of disposal.

Many groups and associations are striving to record this information but these efforts are just beginning. Records are kept on the number of horses that

are processed through slaughtering facilities in the United States and Canada. Breed associations are trying to keep a count of inventory and mortality rates but these are of limited use if owners fail to inform the breeding association of a horse's death.

During a visit between the author and a representative of the American Association of Equine Practitioners, it was learned that veterinarians are not required to keep a record of the number of animals they euthanize each year. Also, records are not kept of the number of disposal, either by euthanization or some other method.

Horses that are buried have no record of death. Ranch horses die on the range without the knowledge to the owner, and, consequently, their deaths are not recorded in any detail. There is therefore no information available about how many horses are disposed of on-site.

Landfills do not keep records of large animal carcasses placed in the landfill. The price to dispose of livestock through a landfill are usually based on one, full light-truck load (Endersby). Because it is based on the load and weight of the load, it does not make any difference if it is a euthanized horse or horse manure.

This same problem exists in the United Kingdom. It is thought that about 40,000 horses die in the United Kingdom per year. The abattoir trade accounts for about 8,000 of these horses. It is possible that there are 100,000 that die each year, but there is no regulation, passporting, or control legislation that documents this number. The abattoir industry accounts for between 5-15% of

horses being slaughtered (Potter). The International League for the Protection of Horse has begun to combat this data problem by documenting horses that pass through the disposal sector.

Of the estimated 657,142 horses that will die in 2003, approximately 65,000 - 95,000 will be processed through the slaughter sector. The number of horses slaughtered is recorded, while horses that are disposed using other methods are not. This exacerbates the problem of not knowing the mortality rate of horses, the means by which they are being disposed, and the level of care they are receiving.

Producers are concerned about the impact of the proposed legislative ban on horse slaughter for human consumption. Horse owners using slaughter as a means of disposal will have to resort to rendering, incineration, burial, or landfill. Other issues must also be considered. Are the other disposal methods capable of handling an increase of 65-95 thousand horses per year? In order for the United States to accommodate more horses, landfills will need to open up space for these animals. Rendering facilities will need to increase their capacity. Incineration plants are very few, but the number may need to be increased in order to handle additional cull horses.

CHAPTER 7

CONCLUSIONS

The purpose of this Thesis is to determine the potential impact of a U.S. slaughter horse ban. A U.S. ban on horsemeat is expected to have an economic impact on the domestic horse industry because total disposal costs for horses will increase. Also, it is expected that the proposed ban would create an economic impact on the United States' supply of horses and Europe's demand for horsemeat exported from the U.S.

Impact on the Supply of Horses

U.S. exports of horsemeat to Europe have declined throughout the past decade. This is a result of three major factors. First, the number of slaughtering facilities located in the United States has decreased to only two plants, both of which are located in Texas. Also, only one of these facilities ships horsemeat overseas. As a result, the number of horses exported for slaughter to Canada and Mexico has increased. Second, horsemeat imports in Europe from countries other than the United States are increasing. This has the affect of reducing cull horse prices in the United States, as was observed in the regression model results.

Although many of the horses exported to Europe from Canada and Mexico actually originate in the United States, other countries have increased their horsemeat exports to Western Europe. In 1996, Argentina began

exporting horsemeat, and now exports as much horsemeat, in terms of value, as the United States (Stolen Ponies). During the 1990s, the American dollar strengthened relative to other currencies. This resulted in export products from other countries being cheaper than American products. Consequently horsemeat sold from countries other than the United States became cheaper relative to American horsemeat. As a result of the strong U.S. dollar, U.S. horsemeat exports declined because consumers and horsemeat retailers tend to order based on price. This has contributed to the decrease in horsemeat exports from the United States since 1990. Even though the supply of U.S. horsemeat has declined over the past decade, it is still an important source for the European market.

A slaughter horse ban could cause the horse industry to experience both an immediate negative impact as a result of the closure of the export market together with a permanent increase in expenses due to increased disposal costs. A slaughter horse ban will almost certainly cause the value of both U.S. horses and horsemeat to decrease to some degree. For example, the value of live U.S. horses is estimated to decline by an average of $304 per horse. This figure was calculated using the discounted net cash flow method. Horses currently have a salvage value. Following a ban on selling horses for slaughter, the salvage value of a horse would become zero. In fact, rather than having a positive return, the horse owner will incur the expense of having the animal disposed of using another method.

The immediate economic impact of ending U.S. horsemeat exports will be significant. Worldwide, U.S. horsemeat sales in 2002 were $26,539,000 (FATUS). The slaughter horse ban would immediately eliminate these sales resulting in producers and handlers experiencing monetary loss. Another immediate impact of the ban would be the decrease in horse value. Cull horses would no longer be sold for slaughter thus decreasing their value. The impact resulting from lower horse prices was calculated in chapter six as $24,320,000.

Aside from the immediate monetary impact, money will be needed to care for or dispose of unwanted horses that cannot be slaughtered and are not disposed. H.R. 857 does not contain language as to what to do with unwanted horses. The only thing the bill does is ban slaughtering, selling, and consuming horses. It does not answer the question, “What is to be done with unwanted horses?” “Where are these horses going to go?” Logically, the bill infers that unwanted horses will be euthanized and discarded through other disposal methods. But, there is an error in this logic. There is no data on how many horses are being disposed of by burial, rendering, incineration, or left for dead on the range. Who knows if these other methods of disposal are capable of increasing production to fulfil the increased disposal needs if slaughtering is banned?

There are presently not enough rescue facilities and humane societies to house unwanted horses (Cordes; Warren). For the United States to address the impact of a ban on slaughter horses, an increase in rescue facilities would need to be in place. Programs that find unwanted horses a new career will

need to be developed in order to address the numbers expected on horse rescue farms.

There are 65,000 − 95,000 unwanted horses per year that are currently sold for slaughter. Caring for each of these horses will cost rescue facilities approximately $2,340 per year, depending on location (table 2). Caring for unwanted horses until natural death would cost $152,100,000 to $222,300,000 per year.[3] This ongoing yearly expense will need to be paid for by someone. The U.S. government, private individuals or institution will have to care for abandoned and unwanted horses. A less expensive method would be to euthanize and dispose of unwanted horses. The estimated annual cost to euthanize and dispose of unwanted horses is: $11,050,000–$16,150,000.[4]

Prior to placing a ban on the slaughter of horses, policy makers and horse owners should begin to seriously consider alternatives for disposal that are cost effective and humane. The equine industry should understand the potential monetary impact of the proposed ban and consider methods to cover these additional costs. Plans need to be in place to provide funds to increase the number of equine rescue facilities along with people trained in handling large animals. A strategy to move horses quickly through rescue facilities and into new homes should also be established.

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[3]65,000 horses * $2,340 per year = 152,100,000;
95,000 horses *2,340 per year = 222,300,000.

[4]65,000 horses * $170 euthanasia, hauling, and rendering = $11,050,000;
95,000 horses * $170 euthanasia, hauling, and rendering = $16,150,000.

The Potential Effect of a Slaughter Horse Ban on the Demand for Horsemeat in Europe

A slaughter horse ban will impact the horsemeat market in a variety of ways. The largest impact will be felt in the high-quality, consistent, and high-priced horsemeat market in Europe. This is the niche market where American horsemeat is used the most. Restaurants serving only endercôte and tenderloin cuts will feel the greatest impact because these cuts are supplied mainly from U.S. horses. This will be an immediate impact for the European horsemeat industry. If it becomes too difficult or expensive for restaurants to ensure that a horsemeat steak will be available to their customers, they will remove it from their menu. The same is true for dealers and retailers. Dealers and retailers are responsible for customer service and who want to be considered reliable suppliers by maintaining the stocks of products they say they will sell.

Retailers will also feel an impact of shortage from horsemeat. If all meat cuts were consumed equally, then there would be enough horsemeat supply for the consumer. That will never be the case. Horsemeat retailers will not be able to obtain as much of the high quality cuts of meat as they would like, especially during the Christmas season. Again, if the retailer fails to provide consistency in stock and quality, consumers will become disgruntled and switch to a substitute product.

Finally, the possible collapse of the horsemeat industry resulting from a U.S. slaughter horse ban must be considered. If the United States bans the

slaughter of horses for human consumption, this will cause a shock to the industry. Retailers and distributors will have to increase the supply of horses from other countries. Argentina, Australia, and East European countries would need to increase horsemeat exports by 65,000 – 95,000 heavy and light horses per year to fill the gap. Horse inventories, inconsistent quality of meat demanded, and European food regulations make that impossible.

Horsemeat consumption in Europe has decreased in the past decade and is expected to continue to decrease. The population of regular horsemeat eaters is aging and the next European generation is eating less red meat overall (Viandes). Even during the BSE crisis, horsemeat consumption did not increase significantly.

The case study, interviews, and tests conducted for this research suggest that the impact of a slaughter horse ban will have a greater effect on the United States than on Europe. Unless the worst-case scenario of a collapse of the industry occurs, European horsemeat consumers will adjust to different suppliers than the United States. The monetary impact in the United States will likely be larger than the impact in the European horsemeat market. Before this ban is enacted, important questions should be answered, and funding arranged to handle the horses that “fall through the cracks” as a result of the ban.

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Appendices

Appendix 1

Price of Cull Horses.

Measured by number of head shipped, weight and price paid

	Head	Weight	Price	Ave lbs.		Head	Weight	Price	Ave lbs.		Head	Weight	Price	Ave lbs.
	1990					**1991**					**1992**			
January	7	7555	3,248.65	0.430		8	7035	2,883.60	0.410		13	12030	5,330.20	0.443
	3	9555	2,905.50	0.304		11	10945	5,562.05	0.508		44	42960	21,452.08	0.499
	42	39895	15,257.17	0.382		14	15320	7,884.65	0.515					
February	5	4300	1,462.00	0.340		39	42535	19,472.60	0.458		23	23495	12,085.36	0.514
	38	18530	15,023.27	0.811		39	42405	20,743.25	0.489		64	65005	35,477.36	0.546
	15	13695	5,473.75	0.400		40	40365	19,692.25	0.488		40	40760	22,597.05	0.554
March	5	4570	2,050.20	0.449		17	19700	9,481.05	0.481		35	19790	21,322.05	1.077
	2	2100	987.00	0.470		25	20330	11,933.22	0.587		38	43655	25,548.48	0.585
	8	8830	4,415.00	0.500		10	9390	4,447.35	0.474					
April	5	4330	2,078.92	0.480		39	41730	21,197.92	0.508		37	39170	22,574.51	0.576
	9	11000		0.380		23	26165	13,428.20	0.513		39	43450	24,827.25	0.571
	2	3800	1,596.00	0.420		21	23659	14,292.41	0.604					
May	7	6315	2,715.45	0.430		39	39480	22,684.10	0.575		17	19870	11,017.60	0.554
	5	5745	2,700.15	0.470		34	36877	22,643.86	0.614		19	21255	9,512.70	0.448
	6	5355	2,167.00	0.405		40	43630	24,873.66	0.570					
June	14	12755	5,994.85	0.470		42	43410	23,207.27	0.535		38	41150	22,921.90	0.557
	7	8595	4,297.50	0.500		40	43260	23,626.60	0.546		44	41995	22,206.25	0.529
	8	8365	3,847.90	0.460		20	21090	10,049.60	0.477		40	42465	23,288.27	0.548
July	24	23785	10,793.85	0.454		39	40020	18,530.30	0.463		40	38720	21,902.55	0.566
	21	17190	7,293.65	0.424		39	39415	19,335.35	0.491		39	42455	23,971.21	0.565
	3	2315	866.40	0.374		44	21690	10,625.70	0.490					
August	14	13465	6,166.58	0.458		44	20543.2	45,815.00	2.230		41	42690	22,731.82	0.532
	45	37305	14,649.90	0.393		10	11565	5,317.20	0.460		38	20540	20,737.79	1.010
	43	13295	5,824.50	0.438		44	21610	43,810.00	2.027		30	35525	19,870.29	0.559
September	41	42665	19,980.50	0.468		42	41505	21,002.00	0.506		17	19990	8,784.60	0.439
	41	38580	16,749.75	0.434		44	43810	22,640.70	0.517		34	32700	15,838.91	0.484
						44	46525	23,306.15	0.501					
October	42	41080	18,149.35	0.442		43	44535	22,269.44	0.500		26	28735	16,309.65	0.568
	14	15630	7,096.90	0.454		43	44820	22,448.80	0.501					
	45	8110	3,828.55	0.472		34	49340	23,042.60	0.467					
November	44	23585	8,460.80	0.359		41	40740	18,770.00	0.461		39	38915	19,982.77	0.513
	48	44265	15,154.70	0.342		15	20405	9,182.40	0.450		38	38135	19,817.18	0.520
	11	11340	4,296.20	0.379		33	34525	16,229.80	0.470					
December	12	10960	4,119.50	0.376		13	12785	6,032.30	0.472		36	40760	22,439.72	0.551
	12	14440	5,682.80	0.394							15	17490	7,015.83	0.401
	45	24315	10,932.55	0.450										
Total	693	557615	236,266.79	0.435		1073	1061159.2	606,461.38	0.599		884	893705	499,563.38	0.566

	Head	Weight	Price	Ave lbs.	Head	Weight	Price	Ave lbs.	Head	Weight	Price	Ave lbs.
	1993				**1994**				**1995**			
January	35	36050	21,168.60	0.587	38	38330	21,092.80	0.550	44	40762	21,038.12	0.516
	26	25000	14,041.07	0.562	39	41305	21,234.20	0.514	36	37520	20,596.15	0.549
	39	40365	22,784.61	0.564	36	38490	21,270.50	0.553	37	36155	19,191.58	0.531
February	30	33025	20,705.20	0.627	37	39455	22,294.39	0.565	34	37055	21,572.05	0.582
	40	35230	21,058.45	0.598	37	40240	23,323.34	0.580	32	34290	19,534.70	0.570
	41	35505	20,327.61	0.573	39	42055	24,216.81	0.576	37	40830	24,221.26	0.593
March	36	37710	23,690.77	0.628	39	39355	21,083.15	0.536	18	19810	8,791.05	0.444
	38	27680	23,193.47	0.838	39	40115	21,705.32	0.541	36	40725	23,278.69	0.572
	38	40250	26,104.30	0.649	17	18520	10,659.50	0.576	22	23745	14,226.85	0.599
April	40	41405	26,765.71	0.646	8	7855	4,250.15	0.541	37	39776	22,840.01	0.574
	39	40327	24,677.74	0.612	33	38935	25,138.28	0.646	30	29790	17,463.30	0.586
	39	38285	24,581.27	0.642	48	49165	28,486.04	0.579	36	39490	23,485.78	0.595
May	38	39815	23,627.17	0.593	25	23365	9,884.33	0.423	17	14930	6,349.00	0.425
	34	34350	21,788.21	0.634	37	38670	22,629.96	0.585	35	40680	24,305.45	0.597
	8	4115	1,728.30	0.420	36	39315	24,631.33	0.627	41	34070	18,546.95	0.544
June	26	25775	15,435.09	0.599	27	28240	16,823.00	0.596	37	38090	21,141.45	0.555
	17	10988	3,516.16	0.320	15	16445	10,065.49	0.612	39	42910	26,099.14	0.608
	41	37930	22,908.96	0.604	14	9090	2,705.04	0.298	37	41145	24,760.45	0.602
July	38	37092	21,431.83	0.578	35	36515	22,008.01	0.603	39	41870	24,354.82	0.582
	48	41880	21,080.75	0.503	27	30195	18,712.50	0.620	38	41360	23,938.73	0.579
	42	41250	25,589.15	0.620	10	11915	7,021.65	0.589	20	24775	10,872.86	0.439
August	31	31390	18,218.54	0.580	37	42940	22,753.66	0.530	33	37955	22,368.65	0.589
	39	41035	25,293.24	0.616	12	12245	4,597.51	0.375	38	42965	25,109.15	0.584
	39	38510	23,114.15	0.600	36	42425	23,967.15	0.565	38	42560	24,708.60	0.581
September	40	39985	27,078.67	0.677	43	47180	24,986.80	0.530	39	42215	24,545.05	0.581
	39	43645	28,950.00	0.663	38	38975	19,504.92	0.500	38	41500	24,643.54	0.594
	40	39435	24,367.54	0.618	8	8530	3,045.52	0.357	39	41490	24,899.05	0.600
October	42	43745	26,786.68	0.612	19	21070	10,487.03	0.498	37	45495	27,630.85	0.607
	40	43075	26,080.87	0.605	39	41660	21,639.70	0.519	39	43560	25,131.38	0.577
	37	44885	28,054.18	0.625	27	29955	17,246.08	0.576	39	40885	23,921.73	0.585
November	20	21085	11,058.89	0.524	38	40040	20,751.40	0.518	37	45915	29,032.60	0.632
	5	6260	2,820.17	0.451	35	37780	20,754.96	0.549	39	41925	23,968.22	0.572
	37	41190	23,914.25	0.581	39	40310	21,672.19	0.538	39	43355	25,295.80	0.583
December	34	39935	22,456.60	0.562	37	38810	21,128.09	0.544	40	43710	24,049.65	0.550
	39	45275	27,382.50	0.605	36	39750	21,394.82	0.538	38	43280	24,525.96	0.567
	38	41165	22,109.77	0.537	37	39765	22,453.41	0.565	37	44980	25,023.70	0.556
Total	1253	1264642	763,890.47	0.590	1117	1189005	655,619.03	0.539	1272	1381568	791,462.32	0.567

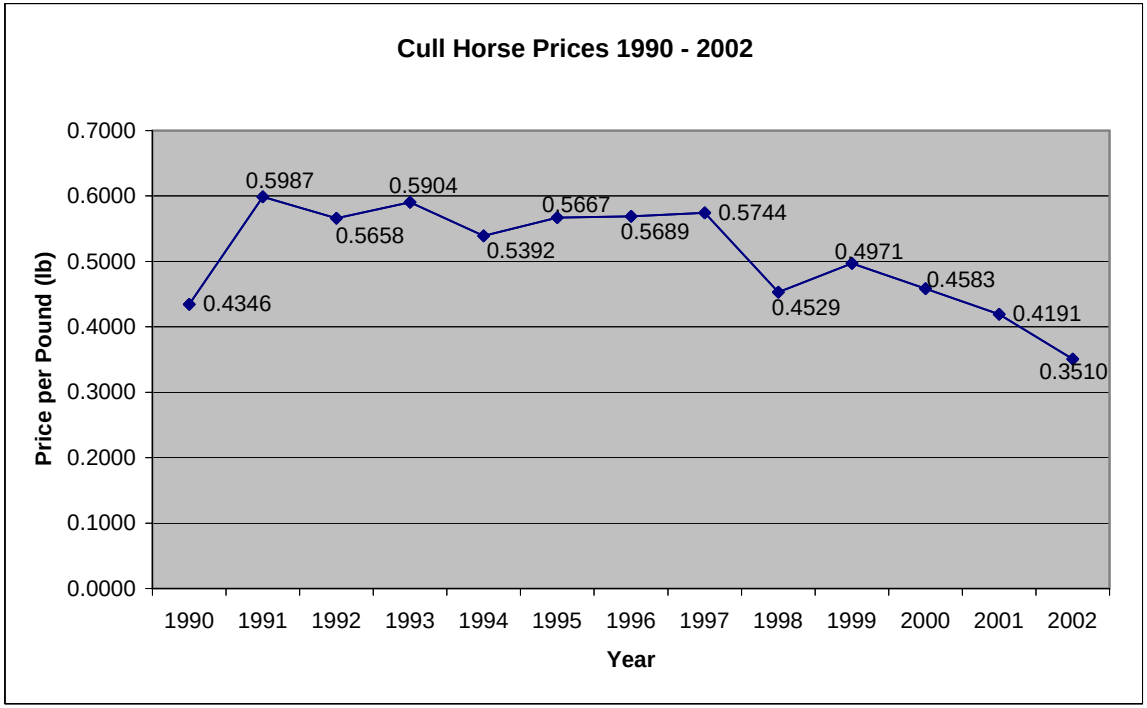
	1996				1997				1998			
Month	Head	Weight	Price	Ave lbs.	Head	Weight	Price	Ave lbs.	Head	Weight	Price	Ave lbs.
January					1	1100	715.00	0.650	43	42680	18,844.51	0.442
					1	1100	693.00	0.630	39	41815	19,918.93	0.476
					1	1100	682.00	0.620	42	44745	21,288.85	0.476
February	29	31455	14,860.85	0.472	1	1120	750.40	0.670	43	44810	20,880.81	0.466
	36	34980	19,209.38	0.549	1	1135	726.40	0.640	40	43580	21,177.00	0.486
					1	1130	700.00	0.619	40	45255	22,596.50	0.499
March	28	28955	16,707.80	0.577	1	1120	716.80	0.640	42	42830	2,355.95	0.055
	31	31040	16,393.00	0.528	1	1100	748.00	0.680	39	39485	18,464.40	0.468
	36	37365	22,156.90	0.593	1	1100	715.00	0.650	40	45555	23,996.10	0.527
April	38	40325	26,693.05	0.662	1	1100	770.00	0.700	42	44715	23,180.83	0.518
	37	40455	25,613.28	0.633	1	1100	759.00	0.690	42	44285	23,393.53	0.528
	35	36590	21,809.25	0.596	1	1100	748.00	0.680	43	44265	22,844.83	0.516
May	41	44285	29,409.55	0.664	1	1100	772.75	0.703	42	47010	24,273.65	0.516
	41	43050	27,023.97	0.628	1	1100	770.00	0.700	41	44335	23,165.15	0.523
	42	48230	32,282.34	0.669	1	1100	726.00	0.660	45	41490	13,745.20	0.331
June	42	43650	27,179.73	0.623	1	1100	726.00	0.660	38	44815	22,629.70	0.505
	40	47225	29,689.50	0.629	1	1100	682.00	0.620	39	44455	21,971.38	0.494
	40	43935	27,446.15	0.625	1	1100	682.00	0.620	40	45675	21,104.95	0.462
July	41	46575	28,028.00	0.602	1	1100	671.00	0.610	39	42555	20,497.30	0.482
	38	40825	23,327.50	0.571	1	1100	616.00	0.560	39	44815	22,818.70	0.509
	42	46954	27,952.75	0.595	1	1100	572.00	0.520	41	46275	21,677.20	0.468
August	43	47675	28,006.90	0.587	1	1130	632.80	0.560	41	46265	19,339.25	0.418
	41	38891	19,905.90	0.512	1	1100	605.00	0.550	42	43780	18,616.70	0.425
	41	40325	22,511.30	0.558	1	1100	616.00	0.560	40	44700	21,756.00	0.487
September	40	43245	25,056.20	0.579	1	1100	573.40	0.521	41	40125	14,888.78	0.371
	41	43080	24,565.18	0.570	1	1100	583.00	0.530	38	44070	22,094.80	0.501
	38	43260	26,207.81	0.606	1	1100	616.00	0.560	39	43620	22,022.01	0.505
October	43	44343	24,899.31	0.562	1	1100	506.00	0.460	45	50305	22,785.60	0.453
	41	45565	26,427.45	0.580	1	1130	531.10	0.470	44	45765	19,563.35	0.427
	16	17705	6,531.95	0.369	1	1100	528.00	0.480	44	49200	21,825.78	0.444
November	42	44095	24,697.03	0.560	1	1140	456.00	0.400	37	41125	18,555.30	0.451
	38	42265	21,262.28	0.503	1	1100	473.00	0.430	37	37165	13,022.65	0.350
	41	45905	25,140.75	0.548	1	1100	396.00	0.360	37	41335	19,572.86	0.474
December	43	46305	24,155.69	0.522	1	1100	517.00	0.470	42	47920	21,878.45	0.457
	40	42527	16,217.85	0.381	1	1100	488.00	0.444	25	25140	8,566.80	0.341
	42	44920	24,786.20	0.552	1	1100	396.00	0.360				
Total	1227	1316000	756,154.80	0.569	36	39805	22,858.65	0.574	1411	1525960	695,313.80	0.453

	Head	Weight	Price	Ave lbs.	Head	Weight	Price	Ave lbs.	Head	Weight	Price	Ave lbs.
	1999				**2000**				**2001**			
Month												
January	40	45530	21,643.31	0.475	34	36105	16,882.10	0.468	40	43225	18,572.10	0.430
	37	39740	19,420.20	0.489	34	35870	15,822.60	0.441	36	38650	15,625.80	0.404
	41	45170	23,389.35	0.518	34	40795	24,328.05	0.596	38	34095	10,050.75	0.295
February	42	45190	21,957.75	0.486	40	46265	24,317.30	0.526	39	43720	20,159.50	0.461
	40	42350	21,811.63	0.515	38	42395	21,928.58	0.517	39	44550	20,131.04	0.452
	42	46695	24,558.32	0.526	40	42970	22,275.45	0.518	39	43840	22,384.55	0.511
March	38	40970	20,682.35	0.505	39	42590	20,982.70	0.493	39	44005	21,076.15	0.479
	38	42661	22,401.60	0.525	40	48410	28,617.00	0.591	39	44520	21,611.29	0.485
	39	40690	19,194.20	0.472	40	44805	23,363.55	0.521	41	44065	21,263.15	0.483
April	41	46930	24,669.18	0.526	37	37235	15,517.40	0.417	40	44005	20,450.30	0.465
	41	43180	22,959.30	0.532	37	33390	11,019.90	0.330	41	45830	24,178.60	0.528
	41	45120	26,000.00	0.576	35	39810	19,716.95	0.495	40	44175	21,084.85	0.477
May	42	48210	28,532.52	0.592	41	44950	22,524.35	0.501	40	47405	25,957.35	0.548
	40	45330	28,064.15	0.619	41	45120	23,373.65	0.518	41	43190	19,853.55	0.460
	37	42925	25,149.85	0.586	41	44750	20,960.58	0.468	40	44445	19,539.30	0.440
June	39	42530	22,669.65	0.533	37	40300	18,896.32	0.469	41	45381	20,905.65	0.461
	39	43955	23,658.25	0.538	33	46985	19,627.75	0.418	36	43310	20,743.15	0.479
	41	44935	21,063.85	0.469	40	42615	19,848.73	0.466	41	42270	16,818.75	0.398
July	42	46065	20,220.80	0.439	38	43165	21,359.55	0.495	40	44905	18,441.50	0.411
	37	36670	13,142.25	0.358	35	40355	20,684.95	0.513	40	44730	16,880.55	0.377
	38	41335	18,564.25	0.449	39	44465	21,981.85	0.494	41	44635	17,599.95	0.394
August	41	47185	22,636.33	0.480	39	44805	20,942.75	0.467	40	44175	18,131.75	0.410
	36	34950	13,807.88	0.395	39	44680	21,380.80	0.479	42	46940	20,296.20	0.432
	34	37835	16,835.60	0.445	38	42835	18,601.00	0.434	41	43875	16,237.50	0.370
September	36	40675	20,951.79	0.515	41	45030	20,637.00	0.458	36	42850	18,702.30	0.436
	41	46420	25,094.03	0.541	40	43626	18,431.55	0.422	39	42545	17,245.10	0.405
	35	37035	16,476.48	0.445	39	45010	19,692.30	0.438	43	44515	18,482.00	0.415
October	42	48385	24,421.55	0.505	41	45215	18,897.45	0.418	40	45340	16,643.60	0.367
	41	43005	19,376.76	0.451	41	45440	19,357.60	0.426	40	43750	15,094.00	0.345
	35	39775	19,825.75	0.498	42	43995	16,429.30	0.373	40	44615	17,060.70	0.382
November	39	45430	23,291.25	0.513	39	41400	15,047.55	0.363	40	43130	13,473.65	0.312
	37	39800	18,228.60	0.458	40	44980	17,373.20	0.386	40	42863	15,534.64	0.362
	36	39220	17,730.05	0.452	38	39690	15,134.90	0.381	40	45705	15,402.00	0.337
December	40	45915	23,074.85	0.503	40	45135	19,441.40	0.431	37	41400	16,567.00	0.400
	40	45180	21,322.65	0.472	41	45080	18,546.03	0.411	41	44665	17,024.00	0.381
	39	44325	22,054.85	0.498	41	40845	14,480.30	0.355	36	42690	15,612.30	0.366
									37	39285	13,607.40	0.346
Total	1407	1551316	774881.18	0.497	1392	1541111	708422.44	0.458	1463	1613294	678441.97	0.419

	Head	Weight	Price	Ave lbs.
2002				
January	38	40495	14,597.55	0.360
	35	35290	9,022.30	0.256
	38	41665	16,137.60	0.387
February	41	41705	15,993.80	0.383
	40	42565	14,297.80	0.336
	39	43350	15,185.05	0.350
March	41	42715	15,509.10	0.363
	38	42030	16,612.85	0.395
	39	41875	15,406.80	0.368
April	41	42285	16,076.70	0.380
	40	42565	16,062.10	0.377
	41	43750	16,859.65	0.385
May	41	42845	16,484.00	0.385
	40	44835	18,075.75	0.403
	41	46962	18,832.79	0.401
June	41	45231	16,356.53	0.362
	36	40090	14,906.00	0.372
	36	41695	16,064.15	0.385
July	40	47785	17,655.75	0.369
	39	45000	15,833.10	0.352
	40	46125	16,683.90	0.362
August	40	46315	17,564.90	0.379
	40	49140	18,390.00	0.374
	40	46625	16,093.55	0.345
September	38	40940	12,774.95	0.312
	41	45815	16,135.10	0.352
	40	43685	15,076.45	0.345
October	40	45115	1,557.85	0.035
	38	41760	13,127.25	0.314
	40	45710	17,152.40	0.375
November	40	44620	14,732.35	0.330
	39	44195	15,588.25	0.353
	40	45635	15,240.25	0.334
December				
Total	1301	1440413	506086.57	0.351

Average Price per lb. 1990 - 2002 = 0.509

Year	Price per lb.
1990	0.4346
1991	0.5987
1992	0.5658
1993	0.5904
1994	0.5392
1995	0.5667
1996	0.5689
1997	0.5744
1998	0.4529
1999	0.4971
2000	0.4583
2001	0.4191
2002	0.3510



Appendix 2: Quantity and Value of Horsemeat exports 1990 - 2002

Horsemeat-FR, Chill, Frozen (MT)

January - December Exports

QUANTITY (MT)

	1990	1991	1992	1993	1994	1995	1996
EUROPEAN UNION	46,066	36,973	33,347	26,320	14,944	15,081	14,071
WORLD	55,319	48,254	42,148	32,359	20,257	18,997	16,605

VALUE U.S.$

	1990	1991	1992	1993	1994	1995	1996
EUROPEAN UNION	$133,972,509	$113,911,000	$105,279,000	$81,181,000	$49,373,000	$51,452,000	$50,773,000
WORLD	$155,808,417	$141,296,000	$128,447,000	$99,175,000	$65,255,000	$67,085,000	$62,653,985

QUANTITY (MT)

	1997	1998	1999	2000	2001	2002
EUROPEAN UNION	9,740	9,083	7,814	6,785	7,257	4,592
WORLD	12,832	12,303	10,479	9,868	11,900	8,085

VALUE U.S.$

	1997	1998	1999	2000	2001	2002
EUROPEAN UNION	$31,642,989	$28,362,259	$24,376,000	$20,901,000	$28,260,000	$16,185,000
WORLD	$41,574,000	$38,029,615	$33,105,000	$30,200,000	$41,032,000	$26,539,000

Source

Foreign Agricultural Trade of the United States (FATUS)
United States Agricultural Exports

http://www.fas.usda.gov/USTrade/USTEXFATUS.asp?QI=
code = 0205000000

Appendix 3
Questionnaire

1. General

1.1 How many horses are slaughtered per week? Per month?

1.2 Do you eat horsemeat?

1.3 How long have you been in the horsemeat industry?

1.4 What else do you process?

1.5 Have you heard about the legislative proposals to ban the sale of horses for use of human consumption?

1.6 What are your views on the proposals for and against?

1.7 How would this proposal affect your business?

How about Italy?

Supply and Demand

2.1 Who supplies slaughter horses?

2.2 Do they deal with meat horses exclusively, or with the general horse industry?

2.3 Who do you supply?

2.4 Is the slaughter horse supply regular, or does it fluctuate?

2.5 How regularly do you receive orders for horsemeat?

2.6 In your opinion, why do people eat horsemeat?

Slaughter Horses

3.1 What horse breeds are best/most desired for human consumption?
Answered in the above discussion about Italy

3.2 What is the most common type/breed of horse slaughtered?

3.3 What is the average age of a slaughter horse?

3.4 Do vaccinations, worming, steroids and other drugs affect whether or not the horse may be slaughtered.

3.5 Does horsemeat require a Vet check or certificate?

Pricing

4.1 How significantly does the price of horses fluctuate?

4.2 How are prices originated?

4.3 If more horses were available at a reasonable cost, would you take them?

4.4 Where do you see the horsemeat industry in the future?